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# NEWS BRIEF



Coasts Ocean and People



MPA Day Banner at uShaka Sea World from SAAMBR

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# WIOMSA ANNOUNCES RECIPIENTS OF 2021 WIOMSA AWARDS

**Nelly Isigi Kadagi** and **Emmanuel Mbaru** are the first ever recipients of the **WIOMSA Emerging Scientist awards!** **Honorary WIOMSA membership** has been conferred on **Mitrasen Bhikajee** and **Mika Odido** and **Fellow membership** has been awarded to **Jared Bosire** and **Johan Groeneveld**.

## 2021 WIOMSA EMERGING SCIENTISTS AWARD

Cognizant of the fact that there is no scheme for recognizing and awarding emerging scientists working on coastal and marine issues in the WIO region, WIOMSA introduced the “WIOMSA Emerging Scientist Award” in 2015 to:

- **promote excellence** and recognize outstanding contributions made by emerging scientists to research in coastal and marine sciences;
- **cultivate healthy competition** for quality and excellence amongst emerging scientists;
- **highlight the scientific work** and talent of emerging scientists; and
- **enhance the visibility** of their work.

There have been two calls for nominations for the WIOMSA Emerging Scientists award, but until now none of the nominees met the award criteria. In 2021, there were 15 eligible nominations for the award. The WIOMSA Board and the award selection committee were thrilled by the large number of nominations and by the outstanding quality of all the submissions. It made for a very competitive process in the evaluation and selection of the award winners. **Meet the 2021 awardees:**

**Dr Nelly Isigi Kadagi** is the director of the WWF Russel E. Train Education for Nature Program & Conservation Leadership Initiatives in the United States. She was recognized for her scientific excellence and her innovative approach in research, her international and regional eminence and her remarkable track record in mentoring and guiding other emerging scientists in the WIO region and diffusing knowledge across borders. One of her most significant achievements is serving at the frontline of billfish education and research in the western Indian Ocean region. In doing so, she has engaged fishers, government departments and the private sector and raised over USD 150 000 to support billfish tagging, resulting in over 55 000 tagged billfish. Dr Kadagi is currently a principal investigator on the ongoing BILLFISH-WIO project funded by WIOMSA. The USD 330 000 project involves over 20 collaborators in the WIO region and beyond, including regional scientists and students in all 10 countries of the region – including Somalia, a country that has received funding for the first time in the history of WIOMSA’s MASMA programme.



NELLY ISIGI KADAGI

Dr Kadagi has been involved in several capacity development initiatives, including the first-ever regional fisheries stock assessment workshop that took place in 2018. She has recruited a Master's student from Somalia who is registered at Pwani University, and is supervising, mentoring and coaching nine students (three doctoral students, four Master's students and two undergraduates) through the BILLFISH-WIO project. She has authored or co-authored several publications and won a number of awards and grants, delivered keynote presentations and holds memberships of various academic, honour and professional societies.

### 2021 WIOMSA EMERGING SCIENTISTS AWARD

**Dr Emmanuel Mbaru** is a senior research scientist at Kenya Marine & Fisheries Research Institute



(KMFRI). He holds a PhD in Marine Science from James Cook University, Australia and has made several contributions to products and initiatives that have had a significant impact in Kenya and which can be applied to the WIO Region. Emmanuel was involved in piloting gated traps in the traditional trap fisheries of Kenya and these studies indicated large reductions in bycatch, without loss of income by fishers. As coordinator of the fish aggregating devices (FADS) project, he has contributed to sustainable nearshore coral reef fisheries in Kenya using FADs – deploying more than 15 FADs since 2013 in four different areas along the Kenyan coast. Dr Mbaru has been involved in 11 research grants and has received four professional research awards. He has authored or co-authored several research papers, delivered multiple conference and keynote presentations and has supervised seven Master's and undergraduate students.

### 2021 HONORARY AND FELLOW AWARDEES

Honorary membership of WIOMSA is awarded to individuals who have rendered notable service to the development of marine science in the WIO region. Fellow membership is awarded to natural and social scientists in recognition of outstanding work or significant contributions to regional coastal and marine research.

#### 2021 HONORARY MEMBER AWARD

**Mr Mika Odido** is the Intergovernmental Oceanographic Commission (IOC)



Coordinator in Africa, working for the IOC's Sub Commission for Africa & the Adjacent Island States (IOCAFRI) at the UNESCO Regional Office for Eastern Africa. He has been conferred Honorary Membership by WIOMSA for his achievements in developing the African component of the IOC global programmes and for his work in building partnerships and collaborative networks in the WIO region. He has made significant contributions to the development of human capital in data and information management through the establishment of the International Oceanographic Data and Information Exchange regional training centres, such as KMFRI and the Edourdo Mondlane University in Mozambique. **Mr Odido was responsible for the development of the western Indian Ocean workplan for the Second International Indian Ocean Expedition (2015 to 2020)** and he is currently spearheading and coordinating the contribution of Africa and the Adjacent Island States to the UN Decade of Ocean Science for Sustainable Development.

## 2021 HONORARY MEMBER AWARD

### Dr Mitrasen Bhikajee

is recognized for his leadership that has contributed to a significant improve-



DR MITRASEN BHIKAJEE

ment in the management of the coastal and marine environment of the WIO region, and globally. Dr Bhikajee is the chair of the Board of the Quality Assurance Authority in Mauritius. He served as the director and deputy executive secretary of IOC/UNESCO in Paris, France for several years and was the vice president of WIOMSA from 2005 to 2007. Dr Bhikajee was the first chairman of the regional Forum of Heads of Academic and Research Institutions and he helped to organize the first WIOMSA Scientific Symposium in the island states. This was held in Mauritius in 2005. One of his most notable initiatives for Africa and the Indian Ocean is the establishment of IOC/UNESCO's Sub-Commission for Africa and Adjacent Island States in 2012 and the development of its first strategic plan in collaboration with regional stakeholders. Other significant contributions to the region include: the coordination of the preliminary activities related to the Second Indian Ocean International Expedition which provided a large amount of new data and also offered capacity building opportunities for scientists in the region; providing leadership to the Mauritius Oceanography Institute for the joint submission by Mauritius and Seychelles for an extended continental shelf to the UN Commission on the Limits of the Continental Shelf. He initiated the European Union funded programme African Monitoring of the Environment for Sustainable Development (AMESD).

## 2021 FELLOW AWARD

### Dr Johan Groeneveld's

exemplary contribution to promoting inter-disciplinary research in the WIO region



JOHAN GROENEVELD

and beyond, his dedicated commitment to research and his contribution to the training of emerging scientists earned him admiration and respect of scientists and his peers globally and in the WIO region and he therefore merits the WIOMSA fellowship award. Dr Groeneveld illustrious career in marine and coastal research spans 26 years; most of it at the Oceanographic Research Institute, a branch of the South African Association for Marine Biological Research. Some of his notable accomplishments include: leadership of the South African Rock Lobster Working Group and international recognition as expert on lobster fisheries; participation in the development and implementation of the World Bank-funded South West Indian Ocean Fisheries Project (SWIOFP). He has contributed as a lead author or editor of regional outlooks and state of the coast reports report e.g., the *Regional state of the coast report: Western Indian Ocean*, published by the Nairobi-Convention and WIOMSA and a book about the contributions of the research vessel *Dr Fridtjof Nansen* to marine research and capacity development in the WIO over 40 years. Dr Groeneveld has served as principal investigator in regional research projects such as the WIOMSA MASMA-funded Estuarize-WIO project. **Dr Groeneveld has contributed immensely to mentorship and development of researchers in the region, supervising 16 post-graduate students, including 12 at Master's level, two at doctoral level and one post-doctoral fellow and unofficially mentoring many others.** He is

a honorary professor at the University of KwaZulu Natal, School of Biological and Conservation Sciences, , a member of the prestigious Peer-review College of the Marine Stewardship Council (UK); a member of the editorial boards of *Fisheries Research* and the *Western Indian Ocean Journal of Marine Science*.

## 2021 FELLOW AWARD

**Dr Jared Bosire** has been awarded WIOMSA Fellow membership in recognition of his leading role in the initiation of a number of research projects and making a significant contribution to promoting inter- and trans-disciplinary research in the **WIO region**. He is a programme manager at UNEP Nairobi Convention where he coordinates the Global Environment Facility-funded WIO SAP Project covering the 10 countries of the WIO region. He has been a referee for several journals and has won many local and international awards,



DR. JARED BOSIRE

such as the 2014 International Fellow of the Society of Wetland Scientists, in recognition of his global contribution to wetland research and conservation; the 2007 Royal Academy of Overseas Sciences (RAOS) Award for research into the recovery of reforested mangrove ecosystems; and the 2007 distinguished achievements in Marine Science by the KMFRI Board of Management. **Dr Bosire has facilitated the development of regional guidelines and toolkits on key thematic areas, namely the *Guidelines on mangrove restoration for the WIO region, Guidelines on seagrass restoration for the WIO region, Guidelines of environmental flows assessment for the WIO region, Economic valuation guidelines for coastal and marine ecosystems for the WIO region and the Climate change vulnerability assessment for mangroves, seagrass beds and coral reefs.*** This is in addition to facilitating the production of key regional frameworks including the *Regional water quality monitoring framework, the Regional marine spatial planning strategy, the Regional indicator monitoring framework and the Regional marine litter action plan.*

## The WIOMSA Board congratulates these awardees for their commitment and dedication to advancing marine and coastal science in the WIO region.



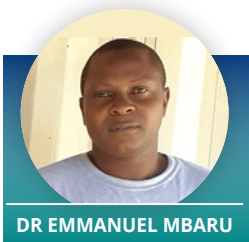
NELLY ISIGI KADAGI



MIKA ODIDO



JOHAN GROENEVELD



DR EMMANUEL MBARU



DR MITRASEN BHIKAJEE



DR. JARED BOSIRE

# THE PROMISE OF PROTECTION: THE WIO MARINE PROTECTED AREAS OUTLOOK. | *By Angela Patnode*

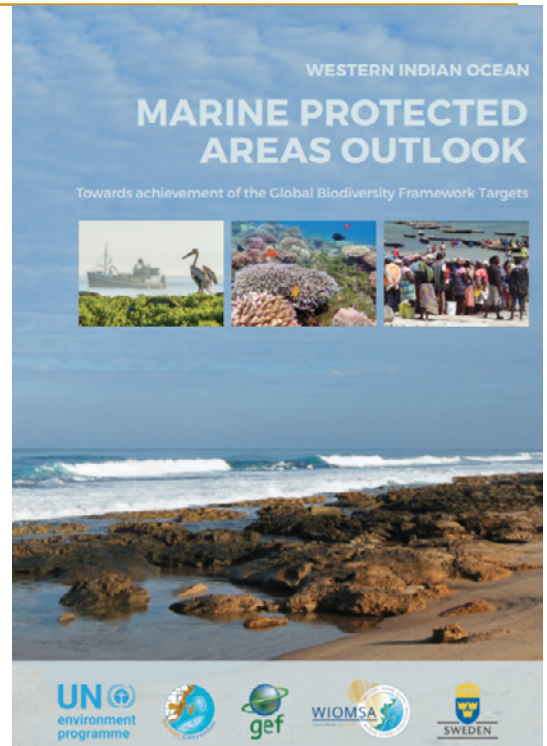
Healthy oceans are critical to human survival. Oceans feed us, regulate our climate and generate most of the oxygen we breathe. They also serve as the engine for much of the world's economy, with the OECD predicting that ocean-based industries could generate as much as USD 3 trillion globally by 2030.

**Yet humankind is damaging and depleting the oceans and their resources faster than ever.** The United Nations estimates 8 million tonnes of plastic waste are dumped into the ocean each year. One third of the world's marine fish stocks are overexploited and half of the world's coral reefs have died. We soon may not be able to depend on the many jobs, health and economic benefits provided by the ocean.

Marine protected areas (MPAs) offer one of the best options to maintain our oceans' health and avoid further degradation. MPAs are defined as areas designated and managed to protect marine ecosystems, processes, habitats and species.

The ecological benefits of MPAs include protecting species, habitats and ecosystem functions. Other benefits include social benefits that come from engaging stakeholders in the planning and fair sharing of benefits. Economic benefits of MPAs arise from ensuring the long-term sustainable use of natural resources and income from sectors like tourism and fishing. These benefits in combination, could help to deliver several of the Sustainable Development Goals, including reducing poverty, improving food security and tackling climate change.

**The Outlook highlights the considerable progress made by the region in establishing MPAs, indicating that more than half of the total area – an estimated 63 percent of the overall square kilometers – was brought under protection in seven years, since the 2015 adoption of Sustainable Development Goal 14.5, which committed countries to conserving at least ten percent of their marine and coastal areas by 2020.**



**In recognition of the crucial role of MPAs in ocean protection, the new Western Indian Ocean Marine Protected Areas Outlook, produced by UNEP-Nairobi Convention and WIOMSA, examines the current and future status of MPAs in Comoros, Kenya, France (in its western Indian Ocean territories), Madagascar, Mauritius, Mozambique, Seychelles, South Africa and Tanzania.**

**Other notable progress from the region includes Seychelles declaring 30 percent of its exclusive economic zone (EEZ) to be protected,** as well as South Africa's declaration of 20 MPAs in 2019 alone. Madagascar has pioneered the creation of 200 locally managed marine areas under its MIHARI network, in which communities carry the mantle of conserving marine space, while the Comoros is adopting new MPA-specific legislation and is currently developing management plans for four of its MPAs.

Despite such impressive progress, only about seven percent of the region's total EEZ is under protection, demonstrating the need for continued investments in declaring and managing MPAs. Such action will be critical to achieve the potential new 30 percent protection target by 2030, as proposed under the post-2020 [Global Biodiversity Framework \(GBF\)](#).

**As part of the WIO MPA Outlook study, the effectiveness of 101 MPAs was assessed and various bottlenecks identified, including weak enforcement and compliance, inadequate financial and personnel capacity, and climate change and pollution. Key recommendations include:**

- the need for **dedicated budgets** for MPA management;
- adopting **proactive law enforcement** and **compliance strategies** to ensure MPA regulations and guidelines are being respected;
- incorporating **research and monitoring** programmes on biodiversity and ecosystems into decision-making; and
- strengthening **community engagement** in marine protection.

**The Outlook further provides case studies and best practices from across the region where such recommendations or other innovations have been applied for shared learning.**

In order to assist policymakers, community members, MPA managers and other stakeholders to engage with the MPA Outlook's findings and recommendations, the Nairobi Convention and WIOMSA have created [virtual interactive dashboards](#). The dashboards visually track, analyse and display key metrics and data points extracted from the wealth of insights contained in each of the country chapters and at a regional level.

By grasping the opportunities to build upon and enhance the effectiveness of MPAs, countries in the region can make progress towards achievement of the post-2020 GBF targets – and safeguard the considerable resources of the western Indian Ocean for generations to come.



Ponta do Ouro MPA © Wynand Uys/Unsplash

# PROGRAMMES: MASMA, CITIES AND COASTS

## RESULTS FROM MARG I APPLICATIONS 2021

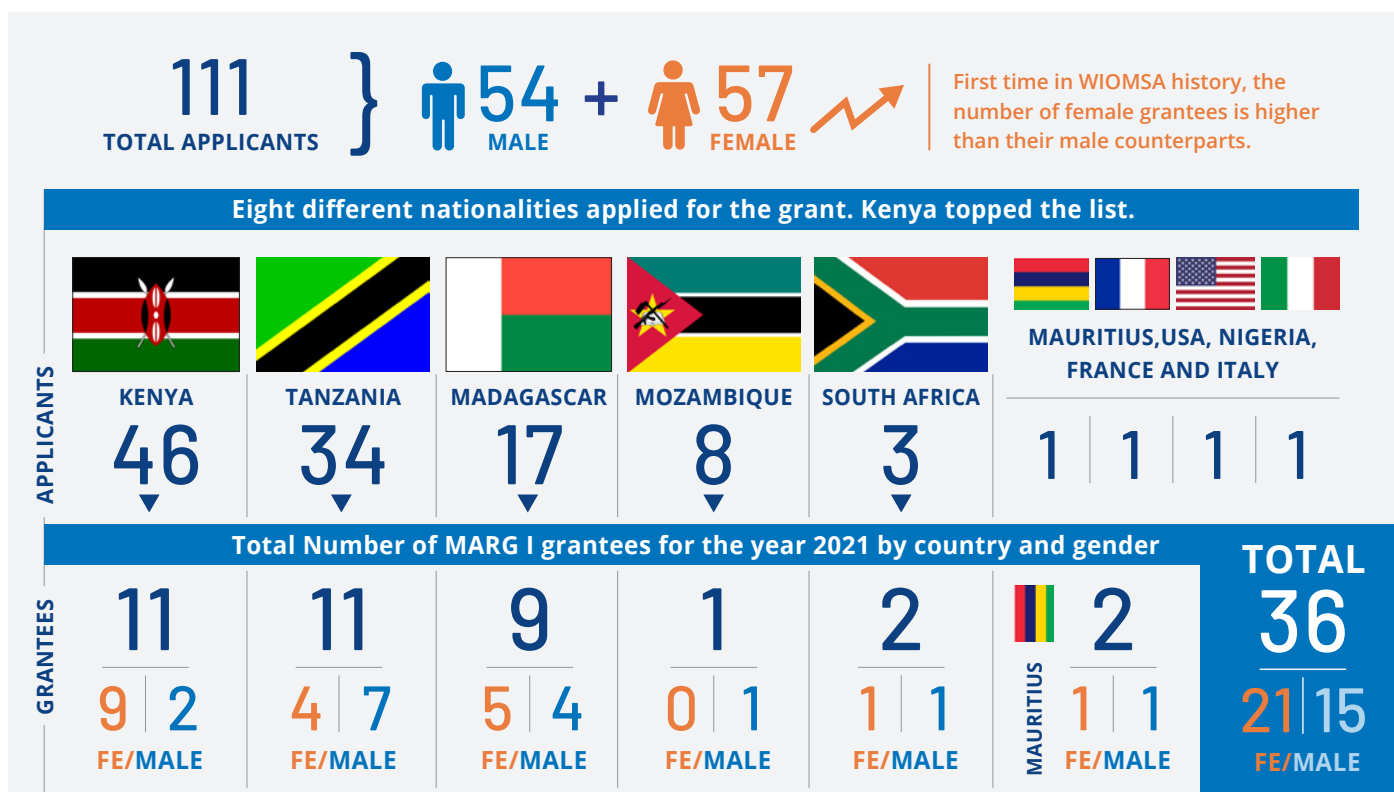
The latest Marine Research Grant Programme (MARG I) applications have opened another chapter and for the first time in WIOMSA history, the number of female grantees is higher than their male counterparts.

**It is an historic milestone.** Supporting young and emerging scientists in the region has been one of WIOMSA's strongest pillars over the years. The Association continues to support emerging and young scientists to turn their research dreams into reality through MARG I.

**The current call received a total of 111 applications, 54 and 57 applications were from females and male applicants, respectively.** The number of female applicants is on the rise again and this is encouraging news for the WIO region. The grant continues to gain popularity outside of the WIO region, but unfortunately this is beyond the scope of MARGs. Ten nationalities applied for the grant, with Kenya

topping the list with 46 applications, followed by Tanzania (34), Madagascar (17), Mozambique (8), and South Africa (3) and Mauritius (3).

**As in previous years, proposals were subjected to a rigorous review process involving experts in the WIO region.** On average, each proposal was reviewed by a minimum of two reviewers and finally discussed at a meeting of the panel of reviewers. Over 90 applications qualified for funding, making it challenging for the panel to decide on the 36 applicants to be awarded MARG I grants. The table below lists the number of applicants to be funded by country and gender.



Access the [full list of Approved MARG I-2021 recipients](#). Visit the [WIOMSA](#) website and social media platforms for more information on the MARG Programme.



# THE ROLE OF FUNDAMENTAL AND APPLIED RESEARCH IN MARINE RESOURCES USE

By Jamal Mahafina, James Mwaluma and Henitsoa Jaonalison

A study to test the viability of merging fundamental and applied research methods to address a marine resource use problem in developing countries will be undertaken by a consortium of research institutions.

The study is titled “Fish juvenile recruitment in coastal habitats of western Indian Ocean” and is supported by WIOMSA through its MASMA programme.



Project site in the village of small-scale fishers in Ankilibe Madagascar

The consortium is led by *Institut Halieutique et des Sciences Marines de l' Université de Toliara* (Madagascar) and includes the Kenya Marine and Fisheries Research Institute, OCEA Consult (Reunion), University of Liege and Katholieke Universiteit Leuven (Belgium), the French National Research Institute for Sustainable Development, the French National Institute for Ocean Science (IFREMER) and the Institute for the Study of Anthropogenic Impacts and Sustainability in the Marine Environment (Italy). It is carrying out an interdisciplinary research project to understand recruitment patterns of the shoemaker spinefoot rabbitfish, *Siganus Sutor*, in critical habitats of the western Indian Ocean and to explore the evidence-based solutions for improving the coastal communities' welfare and for sustaining the use of the marine resource.

## Why does the consortium focus their research on shoemaker spinefoot rabbitfish?

Seagrass beds support the productivity of coastal

fisheries by, ensuring the survival of juvenile fishes and by securing their recruitment into adult populations. This habitat is mostly targeted by small-scale fishers using mosquito seine nets as observed in south western Madagascar. Unfortunately, this practice may affect the fish population stock because their catches consist mostly of juvenile fish which are predominantly shoemaker spinefoot rabbitfish. This scenario highlights the urgent need for innovative and interdisciplinary research in order to support the sustainable use of marine resources and for improving fishers livelihoods.



Consultations with members of the BMU in Diani during site selection. Diani ended up not being suitable for the work due to limited habitats

## Consortium research objectives

- (i) **identify the nursery areas** of shoemaker spinefoot rabbitfish;
- (ii) **know where they come from** through genetic connectivity;
- (iii) **predict the abundance** of newly settled juveniles within the seagrass habitat; and
- (iv) **characterize their trophic ecology** and conduct fish grow-out experiments.

## Research progress

**The research fieldwork was based on sampling fish and epifauna associated with the eelgrass monitoring, that was initiated in July 2021.** Fish sampling was conducted at four coastal habitats (mangroves, seagrass meadows, intermediate areas and seagrass associated with the coral reef) in Madagascar and Kenya, while epifaunal surveys were only performed at three habitats (seagrass meadows, intermediate area and seagrass associated with coral reef).

**In Kenya, field sampling for the project was conducted in the south coastal area of Kijiweni Kwale county.** The criterion for the selection of the study sites was based on availability of all the targeted habitats. Consultation with the Beach Management Unit (BMU) and the site survey was performed in July 2021, whereas field sampling commenced in August 2021.

Simultaneously the project team prepared the pond infrastructure to be used for experimental purposes for capture-based aquaculture at Belaza in Madagascar.

*The supported doctoral student conducting site surveys for epifaunal work in Madagascar.*



*Field researchers depart for fish sampling in collaboration with local fishers in Madagascar*

## Predicted results

The predicted results from this study included the determination of recruitment seasons, identification of factors affecting recruitment and the delineation of nursery areas for *Siganus sutor*. The results were relevant to policymakers and local communities in setting management measures to sustain the continued exploitation of the species and for the promotion of alternative fishing activities for coastal communities in the western Indian Ocean.

## Project academic beneficiaries

The project supported the research of two post-doctoral researchers from Kenya and Madagascar, three doctoral students in Madagascar, and six masters' students from Madagascar and Kenya.



# DOCUMENTING MANGROVE ECOSYSTEM RESTORATION IN THE WESTERN INDIAN OCEAN REGION | *By Mwita M. Mangora*



*Imparting passion of mangrove restoration to the young generation in Madagascar*  
© Zafyson Hasina Randrianasolo



**The mangrove forests of the western Indian Ocean region (WIO) cover approximately 1 million ha, which is about 5 percent of global mangrove coverage.** These forests provide an array of ecosystem goods and services for human welfare including wood for fuel, construction, fish traps and boat building, and non-wood products such as fish, crustaceans, honey and traditional medicine.

Nonetheless, reports indicate that approximately 10 percent of the mangrove cover in the region has been lost due to overexploitation, conversion to other land uses and climate change. Accordingly, mangrove restoration is inevitable as a means to compensate the losses. How best to achieve mangrove restoration is debatable and the question of whether to plant or not to plant is challenging. While the recently produced [\*\*Guidelines on Mangrove Ecosystem Restoration for the western Indian Ocean Region \(2020\)\*\*](#),

**presents a nine step-by-step protocol to help resolve the dilemma, planting of mangroves have in the past been haphazard.** As such there are mixed results, with more failures than successes reported from many places and mistakes repeated over and over again. A few existing successful mangrove restoration initiatives that do exist, have not been appropriately communicated. Understanding what has worked and the impacts thereof is important in order to demonstrate best practices in restoration.

This motivated experts of the western Indian Ocean Mangrove Network, which was established to promote expertise, experience and lessons sharing in mangrove conservation and management, to approach WIOMSA for a Marine and Coastal Science for Management (MASMA) Publication Grant to support the compilation of country-specific case studies on mangrove restoration. The publication would provide details of the objectives for restoration, and explanations of the successes and failures, in order to compare, learn and exchange empirical evidence for common strategies, and to be able to bring together policy reforms on sustainable conservation of mangroves.

**The objectives of this regional publication are to:**

- **evaluate the present state of mangrove forests**, the threats, and to identify and prioritize areas in need of restoration interventions;
- **evaluate the past and present** mangrove restoration initiatives;
- **set regional and national targets** for mangrove restoration to match with global targets; and
- determine and **promote best mangrove restoration** actions to reach the set targets.

**The developed publication would be aligned to the United Nations Decade on Ecosystem Restoration 2021–2030 (the Decade), which aims to massively scale-up the restoration of degraded and destroyed ecosystems as a proven measure to fight the climate crisis and secure livelihoods and biodiversity.** Its objectives

are fundamental to achieving the Sustainable Development Goals on climate change, poverty eradication, food security, water and biodiversity conservation. The planned publication will also promote the existing ambitious global mangrove restoration target of 20 percent increase in total mangrove cover by 2030 set by the Global Mangrove Alliance. The Decade's ambitious targets can only be realized through a practical understanding of what has so far worked and what has not. While the Decade offers a global strategic direction to reach the desired restored ecosystems by 2030, regional interests and national priorities must be consolidated. The publication will provide a timely synthesis of what has been achieved in the WIO region within the mangrove restoration space, the lessons learnt, and the direction the future must take.



| Community engagement in mangrove nursery establishment at Gazi Bay, Kenya © 2-Ane Wanjiru

# WIO GLOBAL CORAL REEF MONITORING NETWORK DATA TRAINING COURSE |

By James Mbugua



The Global Coral Reef Monitoring Network (GCRMN) and the Nairobi Convention's Coral Reef Task Force have been monitoring coral reefs in the western Indian Ocean (WIO) since the late 1990s.

| 14 June - 2 August 2021 | 25 live ZOOM sessions |



Since 2015, lots of effort has gone into data assimilation and analysis for publication of the WIO and other GCRMN regional reports, as well as the *GCRMN global Status of Coral Reefs of the World* report 2020.

**Under the project *Building the WIO GCRMN to make coral reef data secure and accessible*, CORDIO organized an eight-week data training course which ran from 14 June to 2 August 2021. The course aimed to provide skills to regional participants to manage, analyse and report their coral reef monitoring data and information.**

It was funded through a WIOMSA MASMA grant and focused on training coral reef data managers on the use of open-source platforms, such as R programming language and Github, for use in their day-to-day work. The training was led by Franzinho

Smith who has successfully conducted a similar course in the eastern Tropical Pacific.

**The training targeted participants from across the WIO countries who had contributed data to the GCRMN process.**

A total of 102 interested participants applied for the course but only **40 participants were shortlisted** due to limited places. All applicants had equal opportunities for being shortlisted, with 60 percent of the interested applicants being males. The highest number of interested participants were from Kenya and Tanzania. However, only 48 percent of the registered males and 27 percent of the registered females completed the course. In total, **40 percent of the total shortlisted candidates completed the course.**

**Course training was conducted across 25 live sessions using a combination of lectures,**

**worked examples, homework exercises, review sessions, assessments, all presented over the Zoom platform.** WhatsApp groups and Slack platforms were created to enhance communication and online experiences between participants and the organizers. The lessons were divided into six-hour sessions spread across three days per week. All course contents were developed and posted on a GitHub wiki page.

**Participants were first taught how to clone a GitHub repository, and thereafter the installation of R and RStudio packages.** Other topics covered on the course were: data standard and reproducible research; data formatting and standardization; visualization of status and trends; mapping, and spatial representation; linking covariate and external data; and project documentation and reporting.

**In general, the training covered seven presentations, six working examples, five homework tasks and review sessions, a final assessment, mid- and end-of-course evaluations.**

Feedback on the course was mainly positive, with several participants stating that they started the course as beginners in R but that the course had enhanced their skills to the intermediate level.

Most of the participants also showed commitment to continue using R in their work practices after completing the training. Suggestions were also made for in-person training when COVID-19 precautions permit.

Following the training, Coastal Oceans Research Development East Africa will continue to discuss how to extend this type of training with GCRMN, WIOMSA and others, including particularly how to adapt the course materials so that they can be shared with other coral reef data handlers for self-training, as well as translation into other languages. We will also continue to engage the network of participants through guest talks, as well as to provide the regional coral reef research network with updated guidance on data processing and reporting systems to facilitate data contributions to the WIO GCRMN coral reef datasets.



**After overcoming the challenges presented by COVID-19, we are very pleased with the successful completion of this fully virtual training course.**

We have learned a lot and feel there is great demand and potential to continue building the data processing and analysis standards throughout the region's marine science community. We certainly hope that this is just the start.



# THE WIO REGIONAL BENTHIC IMAGERY WORKSHOP ATTRACTS HUGE ATTENDANCE

## WIO REGIONAL BENTHIC IMAGERY WORKSHOP



Photo: © Alain Diringer



After months of preparations, the WIO Regional Benthic Imagery Workshop took place virtually on 30 August to 3 September 2021. The workshop was originally planned as a physical meeting, but due to the ongoing COVID-19 pandemic, the change in the delivery mode was inevitable.

### The course introduced participants to:

- **underwater camera systems** to monitor benthic habitat;
- how to **process and analyze footage**;
- incorporating a **multi-disciplinary approach to tackle issues** related to benthic ecology;
- **developing a standardized protocol** to conduct long term-monitoring; and
- **enhancing collaborations/** partnerships among practitioners in and outside the region.



The five-day workshop built on previous training courses, particularly the second International Indian Ocean Expedition of 2017 and 2018. It was organized in recognition of the need to prioritize enhanced understanding of both shallow and deep-sea benthic invertebrate communities in the western Indian Ocean region and aimed to equip regional researchers with the knowledge and tools needed to monitor and conserve benthic habitats.

The workshop was supported by WIOMSA in collaboration with the Department of Forestry, Fisheries and the Environment (DFFE) in South Africa and other partners in the WIO region. Over 200 participants across the WIO region attended the meeting. This list includes regional experts on benthic ecology, researchers and students. It is through this platform that future collaborative efforts have been established and knowledge on data processing and analyses have been gained. We believe that a better understanding of the benthic ecosystems will not only strengthen conservation decisions but also sustain livelihoods within the region. More information on the Benthic Imagery Workshop will be presented in the December Newsbrief.

### NEWS FROM THE WIO-EARLY CAREER SCIENTISTS' NETWORK

## WIOECSN AT THE AFRICAN YOUTH SUMMIT 2021

The African Youth summit was aimed at fostering ownership and stewardship of the global Marine Protected Areas agenda among African youth.



The summit targeted all groups of youth in both urban and traditional sectors to collaborate so that no one is left behind. With the theme **“Our Africa, Our Ocean, Our future”**, our network was strengthened by its capacity to reach out to numerous early career scientists who were willing to bring changes and to make a difference across the African continent. **Our youth network hosted a talk on “Building your career with the environment” with the western Indian Ocean Early Career Scientists Network (WIOECSN).** The network presented different activities and opportunities that are offered to early career scientists in making them custodians of the ocean in the WIO region. Our members across the region facilitated different sessions in the summit and made a [video](#) which inspired the youth to connect in making a difference.

The summit managed to build capacity among youth in Africa and share knowledge on how different youth have been doing in conserving and protecting our mother ocean. **It mobilized African youth and allowed them to fully take ownership of the global 30x30 agenda and unpack this initiative from an African perspective.** It also provided a platform where youth engaged with various stakeholders, asked questions and held discussions.

As African youth, we came together to raise our voices for the ocean, to bring changes, share knowledge and build a better tomorrow through marine protected areas in the Africa continent. **We are young and powerful, we can do this together. Let us connect!**

### Climate is changing.

Marine pollution is reaching unprecedented levels. Overexploitation of marine resources and illegal fishing are on the rise. Urgent action is needed to conserve the oceans, and it starts with us. We need the oceans, and the oceans need us.

Deeppeka Kaullysing and Sundy Ramah produced a [video](#) for the AYS Summit







**MEET RACHEL THOMS, OUR CO-OPTED MEMBER FROM THE UNITED STATES OF AMERICA**




and an early career researcher in the ocean sciences. She works

as a data scientist in the World Resources Institute in Washington, DC, **holds a Bachelor of Science and is specialized in data science for marine conservation.** She is interested in “data revolution” and bridging the data divide for ocean science for sustainable development.

**In March 2022, Rachel will begin a nine-month Fulbright Fellowship in Mozambique** where she will partner with the Marine Megafauna Foundation and WIOECSN in Mozambique. Rachel will work with the research team to collect baseline fishery data in Praia da Tofo where local communities have expressed concern over biodiversity deterioration and threats to food security.

During her leadership role in WIO-ECSN she would like to collaborate with peers studying marine science in the western Indian Ocean to better understand the data environment in the area, improve data dissemination, and promote data literacy to ensure scientists, NGOs, and policymakers in WIO nations take advantage of the “data revolution” to manage marine ecosystems. The WIOECSN leadership team heartily welcomes her onboard.

**CONNECT WITH HER ONLINE VIA**

-  [rachelthoms](#)
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**NEWS FROM THE FIELD:**

**WIO-ECSN MEMBER DAMARIS KINYUA DISCUSSES HER PHD FELLOWSHIP AND GRANT AWARD**

I am passionate about interdisciplinary research that aims to advance community livelihoods. Specifically, **I focus on building**

**equal opportunity education and designing conservation projects that enhance faculty and student development.** I am currently a doctoral candidate in

fisheries science, at the School of Pure and Applied Sciences at Pwani University, Kenya. My doctoral work is funded by a WIOMSA MASMA grant through the regional BILLFISH-WIO project, and the World Wildlife Fund (WWF) Russell E Train Education for Nature Fellowship. The support from WIOMSA and WWF has brought me one step closer to achieving my career ambitions. Working at the interface of conservation research and policy is a dream come true for me. I can contribute to the development of environmental capacity among emerging professionals, local communities and other stakeholders. By exploring local technologies and ecological knowledge, I will also be able to strengthen national and international research collaboration.

**My doctoral research on “Characterizing billfish utilization, socio-economic pathways, and governance along the Kenyan coast” covers three key areas:** a)

evaluating the socio-economic contribution, b) assessing the value chain framework, and c) defining perceptions on the management of billfish fisheries to enhance their sustainable use. Billfishes are highly migratory species that are exploited by multiple resource users, either as a direct catch or as bycatch. Despite their socio-economic importance, there is a paucity of information on their economic contribution to livelihood in Kenya and the wider WIO region. My doctoral research seeks to fill this information gap by examining the billfish fishery socio-economic pathways and management/governance strategies. Therefore, my work will provide new information on the socio-economic profiles of billfish fisheries given the growing interest by many developing

## NETWORKS: WIO-ECSN, WIMS

WIOECSN appoints a co-opted board member; Damaris Kinyua discusses her PhD fellowship and grant award \_\_\_\_\_ ...continued

countries to benefit from “blue economy” and the need to meet the Sustainable Development Goals (SDGs) on food (SDG 2), economic security (SDG 8) and conserve and sustainably use marine resources (SDG 14). In addition, my findings will be

significant for tapping into existing local ecological knowledge which is relevant in providing long-term guidance to grassroots initiatives to conserve billfish species through community education, stakeholder involvement and alternative sources of income.

## WIMS HOSTS COUNTRY CHAPTER MEETING IN SOMALIA

In the last two issues of the WIOMSA Newsbrief, the Network of Women in Marine Science (WiMS) has featured the country chapter meetings that have taken place since December 2020. In July 2021, the final meeting in this series took place for WiMS members from Somalia.



These country meetings had been held regularly since the COVID-19 pandemic made it impossible to hold a regional meeting in 2020. **The purpose of the meetings was to identify: country baseline studies to determine what the situation is for female marine scientists today; to create the country chapters; and to identify goals and activities for the next five years.**

The full report with the results from the WiMS country meetings will be made available shortly.

The WiMS Somalia Country Chapter meeting was hosted online by the WiMS country representative, Fardowsa Wehliye. The vice chair of WiMS, Obakeng Molelu, was also present during the online meeting.

The meeting participants were given an introduction to WiMS before they went into discussions on the challenges that young marine scientists in Somalia face.

**Each WiMS country chapter will now be responsible for the continued work in each of their respective countries under the leadership and guidance of the WiMS Steering Committee.** Some of the chapters have already elected their local leadership teams that will lead the work in their respective countries, whilst some will schedule their elections in the near future. The Steering Committee of WiMS is currently drafting the terms of reference for the country chapters that will help guide the important work that they do.



**Do you wish to be involved in one of our country chapters?**

Send us an email at [wims@wiomsa.org](mailto:wims@wiomsa.org) and we will connect you to the right person.

And don't forget to register for WiMS membership at [www.wims@wiomsa.org](http://www.wims@wiomsa.org).

## HIGHLIGHTS FROM RECENTLY PUBLISHED PAPERS

### STUDY EXPLORES COMMUNITY ATTITUDES TOWARDS PAYMENT FOR ECOSYSTEM SERVICES | By *Cicelin Rakotomahazo*

The findings of a new study; and the subsequent establishment of the Tahiry Honko project in Madagascar confirm that community-led management benefits both people and nature.

**“ This is the first study looking at people’s attitudes towards a mangrove PES project in Madagascar, and paves the way for bringing in more community perspectives to help shape future projects”**

*Cicelin Rakotomahazo, Blue Forests coordinator for Blue Ventures in southwest Madagascar*

Photo:  
Louise Gardner,  
Blue Ventures

**blue ventures**  
beyond conservation

The mangrove forests of Tahiry Honko stretch 1 230 hectares along the coast of the Baie des Assassins (Assassins Bay) in southwest Madagascar. **Tahiry Honko, meaning “preserving mangroves” in the dialect of the Vezo people, is a payment for ecosystem services (PES) project.**

It combines community income generation with conservation and restoration of mangrove forests. The forests sequester and store carbon dioxide, which companies pay for as carbon offsets. This exchange is commonly referred to as “**blue carbon trade**”. Currently, Tahiry Honko is preventing 1 371 tonnes of carbon dioxide per year from entering our atmosphere.

**The Tahiry Honko project is run by members of the communities in the Baie des Assassins area.** To secure community ownership, research was done by [Blue Ventures](#) with the *Institut*

*Halieutiques et de Science Marines* at the [University of Toliara](#), in order to understand the people’s attitudes towards the project. The findings can be found in the recently published paper *Community perceptions of a payment for ecosystem services project in southwest Madagascar: A preliminary study*. The paper’s authors ran a workshop in 2019 with a group of local residents where participants were asked to consider the project’s positive and negative repercussions for their futures.

#### **Communities’ hopes for the future**

The workshop revealed ambitions for improvements to infrastructure such as schools, health clinics and wells for clean water. Participants agreed that they also wanted to subsidize school fees for children in the community. In addition, the group predicted that participation in the management

and governance of the scheme would strengthen local leadership and increase awareness of the importance of mangroves for communities.

### An opportunity to raise concerns

The workshop also uncovered some serious concerns. **Community members were worried that improved living standards as a result of the scheme could accelerate environmental destruction:** bigger houses as a result of more income would require more timber for construction; or the capacity to buy more fishing nets could increase pressure on fisheries. The participants also worried about where they would source wood for building and cooking, or whether they could still enter the forest for traditional rituals once the scheme's restricted access was in place.

**The scheme's setup phase could take up to five years,** therefore the group wanted more clarity on how they would secure an income during that period, especially if they could no longer access the forests. Furthermore, the participants wanted assurances that they would remain in control of the PES in the future, should there be changes in non-governmental organization (NGO) partners.

### Suggested solutions

Solutions proposed during the workshop focused on alternative livelihood initiatives to reduce dependency on cutting mangroves. It was suggested homes could be made of stone rather than mangrove wood. They also proposed training fishers in non-destructive fishing methods to relieve fisheries pressure and introducing high-efficiency cooking stoves to reduce wood use.



A major concern was the power relationship between local government, the NGOs, and the community. The group suggested elders from their communities would participate in decision making to ensure transparency and control of the project.

### Tahiry Honko

**Since the workshop in 2019, community involvement and ownership have been at the heart of the project.** Community members carry out carbon and forest monitoring in line with the rigorous [Plan Vivo standards](#). Blue Ventures helped develop [data-sharing methods](#) which allowed results to be shared with project participants, many of whom had low literacy.

Recognizing communities' expressed needs for alternative livelihoods, sea cucumber and seaweed farming, and mangrove beekeeping were introduced.

**The findings of the research and the subsequent establishment of Tahiry Honko confirmed that community-led management benefits both people and nature.**

 **READ THE FULL PAPER: [Available Here](#)**

The paper in the journal *Land* was funded by WIOMSA. *Community perceptions of a payment for ecosystem services project in southwest Madagascar: A preliminary study*

# A SHARED APPROACH LINKING BIODIVERSITY AND PEOPLE

Decisions to be made at the Fifteenth Conference of the Parties (COP 15) Convention on Biological Diversity will shape biodiversity conservation approaches for the next 30 years, a critical time for the future of nature and people.

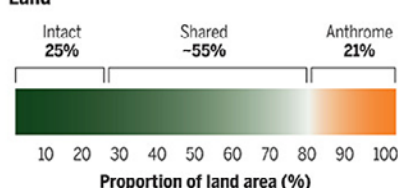
By David  
Obura

## Shared Earth, shared ocean framework

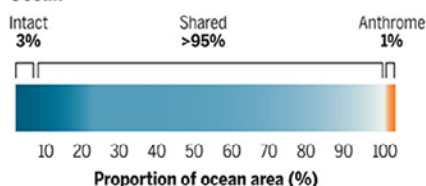
(Left) The approximate proportion of land or ocean area in 2020 in which nature is intact, variably affected in shared spaces, or fully altered in anthromes [from (2)]. (Middle) Schematic allocation of effective conservation actions on land across the gradient of condition (as in left panel) in a country or territory. Protection of 17% of total land under Aichi Target 11 is depicted in the 0 to 20% of land where nature is most intact. Protecting 20% of area under intact native habitat is shown in shared spaces, from 21 to 80% of territory. Protecting 5% of area under intact habitat in anthromes is shown from 81 to 100% of territory. The sum of these meets the draft global biodiversity framework target of 30% protected. Relative to the 30x30 campaign for protecting nature in areas most important for biodiversity, the shared Earth approach spreads effort and benefits of additional conservation across space. (Right) The contribution of restored versus intact habitat will increase in more altered shared spaces and in anthromes. The contribution of different governance regimes, such as by Indigenous people and local communities (IPLCs), conventional protected areas (PAs), and “other” mechanisms, may vary across spaces. Axes labels are as in the middle panel.

### Global condition of nature

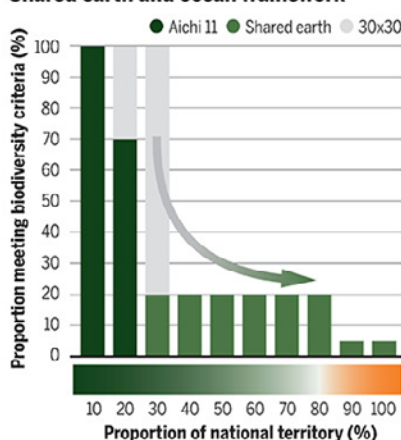
#### Land



#### Ocean

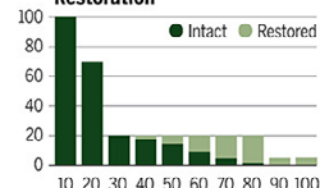


### Shared earth and ocean framework

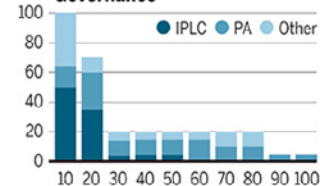


### Implementation options

#### Restoration



#### Governance



In a new study released 13 August 2021 in the journal *Science*, a group of African scientists, conservationists and community leaders presented a “shared earth, shared ocean” framework to guide the repair of societal relationships with nature. In it we focused attention on connecting people with nature directly in the places where they live, highlighting the integration of people with nature we will need to reverse biodiversity loss across land- and seascapes. This is particularly important for Africa in low-income contexts, where people depend deeply on nature’s benefits, and their prosperity will be undermined if biodiversity loss continues at today’s pace.

The solution proposed is to shift focus from the most remote or intact places to focus also on “shared spaces” across land and seascapes. Till recently, conservation has focused primarily on

“the best” locations for biodiversity, resulting in a strong focus on area-based protection in order to reach the targeted 17 percent of land and 10 percent of oceans for protection under Aichi Target 11 (see figure “global condition of nature”). But, there has been a significant history of failing to address equity with respect to the access rights and benefits received by indigenous people and local communities, and under-investment in management within protected areas.

### To redress these, the shared earth/ocean approach is based on four pillars:

- 1. Prioritize at the local scale**, and build “from the bottom up”, aggregating from local to national and larger scales;
- 2. Address equity and peoples’ rights** and needs, to assure people-centred and nature-positive outcomes;

3. **Integrate all knowledge** at this scale, including from local, traditional and scientific sources, to assure that the local context and granularity of biodiversity and peoples' uses are addressed;
4. **Address all targets** of the Global Biodiversity Framework (GBF) concurrently, as an integrated whole.

**The approach thereafter advocates that conservation effort should be spread across all areas**

within countries and in the ocean (see figure "shared earth and ocean framework"). This approach is facilitated by a recent finding that 20 percent of area under native habitats can provide sufficient biodiversity and ecosystem service benefits for sustainability to be achieved. A key requirement is that the area within high quality habitats must be represented at local scales, even down to 1 km<sup>2</sup>. This enables conservation to address and meet people's needs at all scales. Further to this, by being at the local scale the potential for governance and leadership by the indigenous people and local communities is maximized. In remote areas where nature is more intact, larger proportions of intact habitats can be counted towards the cumulative biodiversity goals. Aggregating the proportions of intact habitats and natural areas across all areas could add up to the increased ambitious target of 30 percent of protected area coverage under the GBF.

With reference to shared spaces, our approach prioritizes "working" and/or "production" land and seascapes, the ecological contributions from nature to people, and the integrity of natural ecosystems where people live and work. The spatial approach also addresses multiple targets simultaneously, such as the 21 targets under consideration in the GBF; other conventions; and the overarching framework of the Sustainable Development Goals and its targets. Different policy options can also be addressed within the approach (figure "implementation options") such as the contribution of restoration, or governance

options for protection (formally protected areas, other effective conservation measures and other approaches).

While the paper in Science necessarily addressed land and sea jointly, application for marine ecosystems is a top priority within the WIOMSA community. Significant investments have already been made in the western Indian Ocean in government protected areas, community-based conservation areas and even some private sector areas. But these cover a small proportion of total marine areas and investing in marine spatial planning – already a priority across most countries – can benefit from application of the shared ocean approach. The benefits would be ensuring locally-contextualized planning (such as at subnational governance levels, rather than just national levels) and comprehensively addressing people and equity aspects of conservation, resource use and governance.

**We applaud the necessary increase in ambition to conserve nature, but we share alarm about the limited equity and justice in establishment of protected areas**

and impacts on people. Further to this, raising the burden of protection in the global south while failing to address global economic drivers of biodiversity decline will only repeat and amplify the historic cycles, and any effort invested in conservation could be wasted. We see hope in the emerging GBF and new and diversified approaches to conserved areas and the development of other less formal conservation mechanisms and we hope this framework can support tangible steps for more successful implementation of conservation integrated with meeting the needs of people.



**READ THE FULL ARTICLE:**

Further information on [CORDIO](#)

Contact the lead author: **David Obura,**  
[dobura@cordioea.net](mailto:dobura@cordioea.net)

## LESS THAN 500 HUMPBACK DOLPHINS REMAIN IN SOUTH AFRICAN WATERS | By Stephanie Plön



© Brigitte Melley / Stephanie Plön

### **A new study is suggesting a total population of fewer than 500 Indian Ocean humpback dolphins remaining in South African waters.**

The main outcome of the study indicates that a continued investigation of potential contributing factors and their interaction will take too long, inevitably resulting in another case of documenting extinction.

**Indian Ocean humpback dolphins (*Sousa plumbea*) are coastal dolphins found within 500m from shore and in water depths of less than 25 m.** They are light grey in colour with a characteristic hump on top of which the small dorsal fin is located. They usually occur in groups of one to five animals.

**The species is declared “endangered” by the International Union for the Conservation of Nature throughout its entire range in the Indian Ocean – from False Bay, South Africa, to the southern tip of India.** In South African waters, the Red List of Mammals of South Africa identified the species as the first, and to date only, endangered marine mammal resident in its waters.

The SouSA Consortium, a novel and highly collaborative network of scientists and conservationists, was formed in 2016 to combine knowledge and research efforts to address the conservation of Indian Ocean humpback dolphins

at a national scale. The first collaborative project collated available photo-identification data in an attempt to refine a national population estimate and investigate movements between research sites. This work was able to identify 247 uniquely marked individuals, suggesting a total population of fewer than 500 animals remaining in South African waters.

With this in mind, the most recent study of the SouSA Consortium presents the results of a SWOT (strengths, weaknesses, opportunities and threats) analysis conducted in an effort to identify the next steps to take towards the conservation of Indian Ocean humpback dolphins in South African waters.

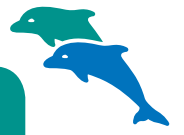
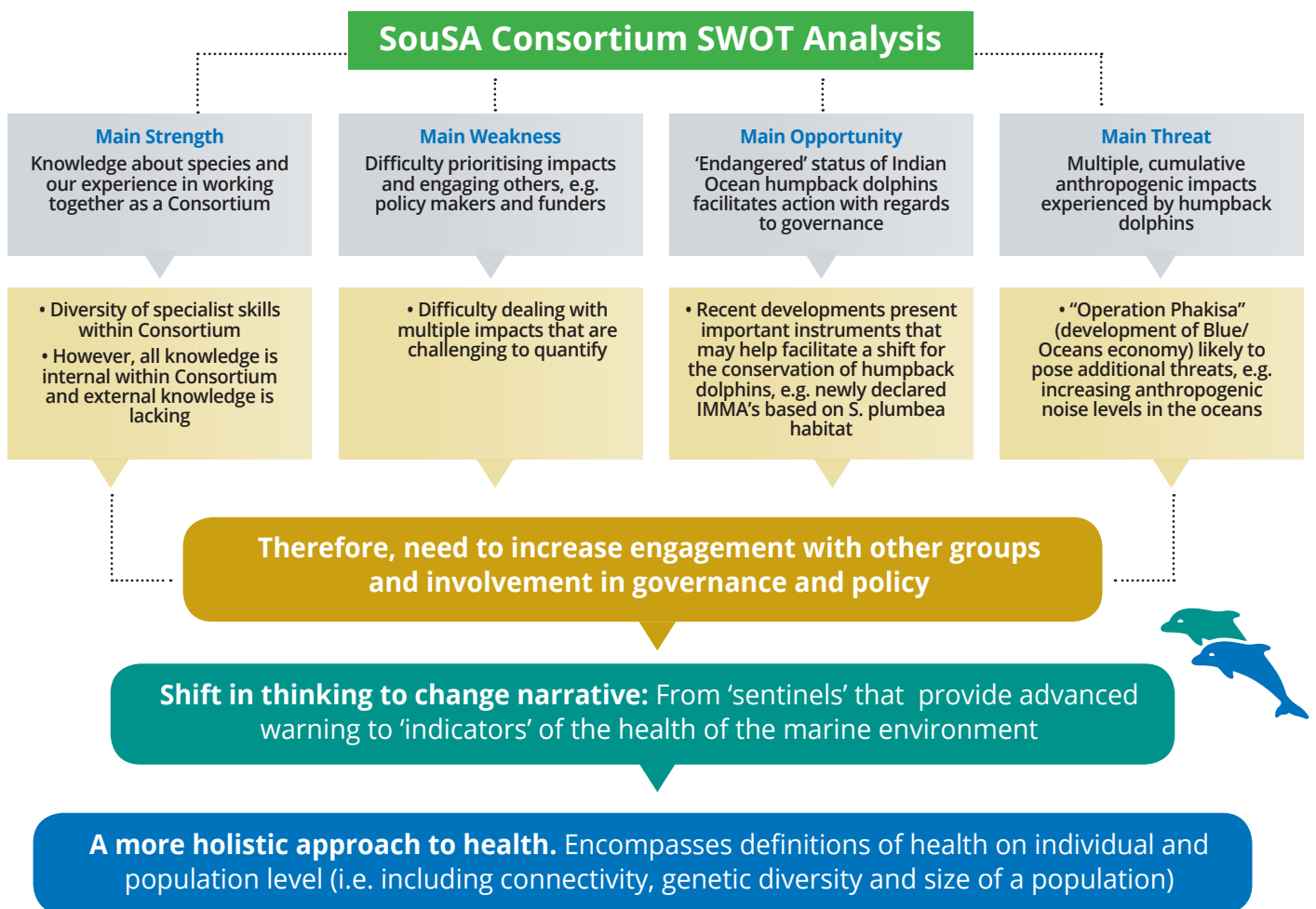
The poor conservation status of the species is largely a function of its coastal habitat, reflecting large-scale environmental degradation. However, individual threats and solutions are challenging to identify because the South African marine environment is undergoing significant natural and

anthropogenic changes, with major shifts in the distribution and numbers of some prey, competitor and predator species. **The main outcome of the study indicated that a continued investigation of potential contributing factors and their interaction will take too long, inevitably resulting in another case of documenting extinction.** No single cause for the rapid decline of humpback dolphins in South African waters can be identified, and it is rather the result of the cumulative effects of multiple stressors, which are difficult to pinpoint and mitigate, that are impacting population numbers. Continued research and a shift toward more action-focused conservation

efforts are suggested, the first concrete steps of which should be the development of a conservation management plan with input from all other stakeholders.

Other important developments in the western Indian Ocean that will contribute important aspects towards *Sousa* conservation include Dr Gill Braulik's (University of St. Andrews, UK) range-wide photo-identification study and Dr Tess Gridley's (Stellenbosch University and Sea Search Research and Conservation, South Africa) acoustic work.

**The authors would like to thank WIOMSA for contributing funds towards the publication of this study.**



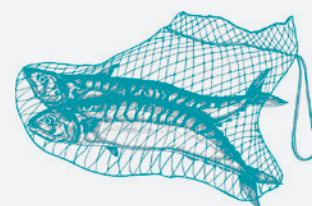
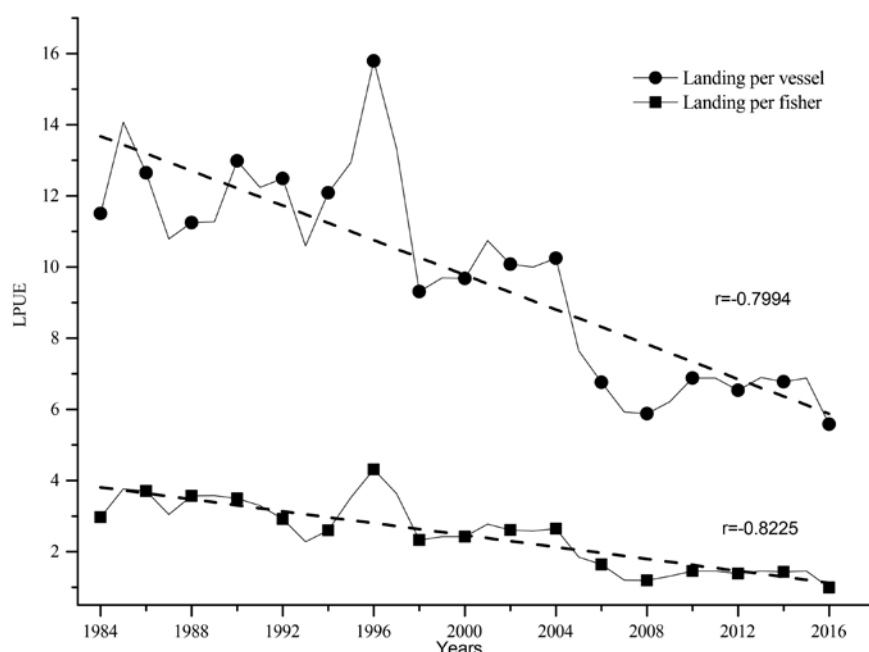
**READ THE FULL PAPER:** Plön, S., Atkins, S., Cockcroft, V.G., Conry, D., Dines, S., Elwen, S., Gennari, E. et al. 2021. Science alone won't do it! South Africa's endangered humpback dolphins *Sousa plumbea* face complex conservation challenges. *Frontiers in Marine Science*, 8: 906 [Available here](#)



# LOW ADAPTIVE CAPACITY AMONG SMALL-SCALE FISHERS RESULTS IN PERSISTENT FISHING BEHAVIOUR – A RESPONSE TO DECLINING FISH LANDINGS

| By Mathew Ogalo Silas

Fish stocks fluctuate naturally because of temporal environmental variability. However, about two-thirds of global fish stocks are already estimated to be fished within their biologically sustainable levels, while about one-third are overfished.



Declining landings

With the current overexploitation of fishery resources and predicted variability in fish catches that may intensify with a changing environment, **it is not clear how and to what degree small-scale fishing communities – which make up over 90 percent of the world’s fishers and fish traders – would cope with and adapt to such change.**

To date, most assessments and vulnerability studies have focused on global, regional and national levels, while studies at village and community levels, where adaptive planning is also important, are less common. Using a Marine Research Grant 1 (MARG I) from WIOMSA, and based on data from official fishery records and interviews with artisanal fishers from eight communities along the

Tanzanian coast, we assessed small-scale fisheries concerning (i) long-term trends in fishery landings, (ii) long-term alterations in fishing gear use, and (iii) fishers’ perceptions of how they have been coping with and adapting to fluctuating fish landings. We also investigated the adaptive capacity of a wide range of coastal villages by assessing the fishers’ responses to an expected future scenario of a major (50 percent) decline in landings from the current fisheries catch levels.

**Long-term records of fish landings showed an alarming 50 percent reduction in terms of both catch per vessel and catch per fisher from 1984 to 2016.** According to the interviews, most fishers (75 percent) changed fishing grounds from nearshore to offshore areas over the past decade,

owing to a general perception that nearshore areas have suffered a major reduction in fish stocks (because of overfishing and environmental changes related to extreme climate or weather events), while offshore areas are still productive.

**The change in location of fishing grounds is probably a result of the clear switch in major gear type utilization from beach seine to ring net that has occurred over the past decades.**

With a further progressive decline in fishery catches to a predictive level of 50 percent of the current catch level, there is a general perception that artisanal fishers will continue fishing because alternative livelihoods (like crop farming, which employs over 65 percent of the population) have suffered a similar negative impact.

If climate change and environmental distress lead to fewer resources in local habitats, overfishing would speed up (especially when fishers continue fishing the potentially already depleted stock) and this would have adverse effects on food security. In this type of fishery, where most fishers (84 percent) are aware of the alarming scenario (declining stock and lack of flexibility)

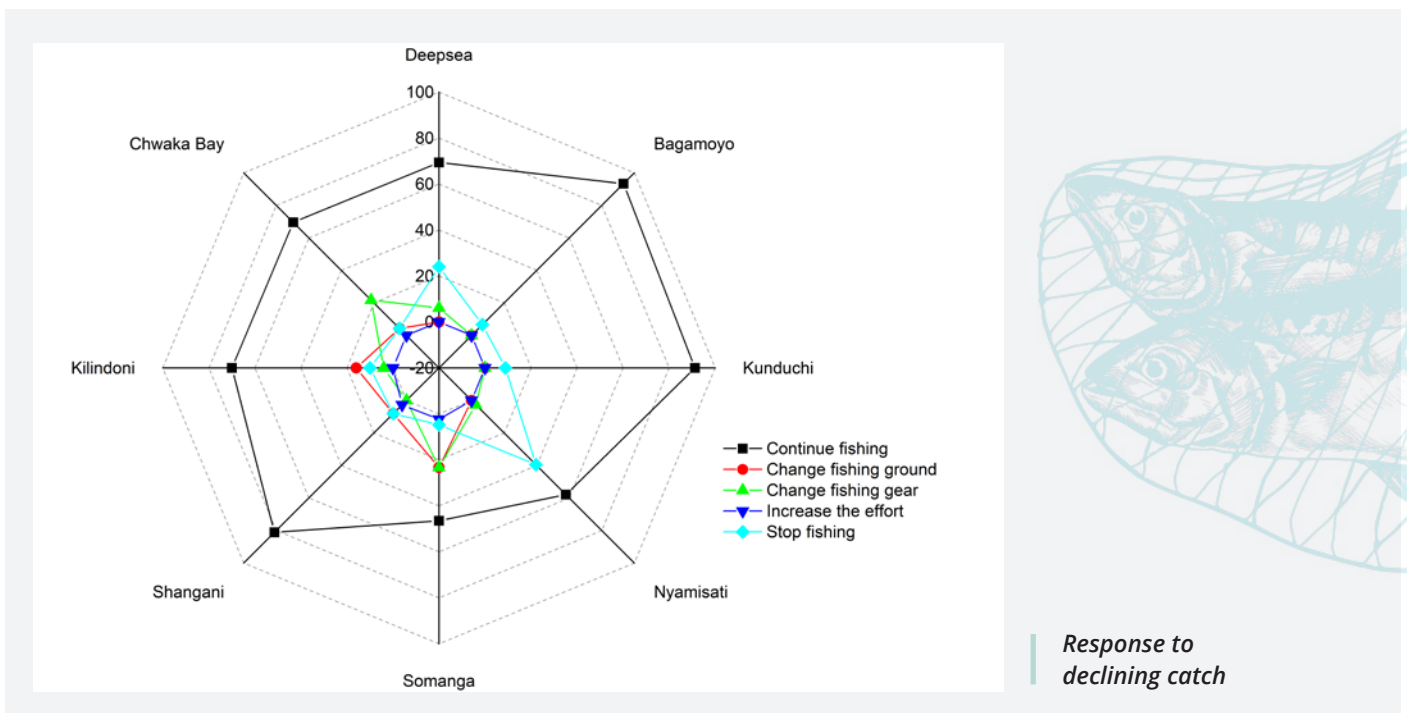
and would be adversely affected, particularly with respect to food availability, income and coastal livelihoods. If management is directed towards the community level (bottom-up strategies in this case), the result may be better than the current top-down management strategy. This would entail the management of natural resources under a thorough plan established by the government and executed by all stakeholders.

**This work is published in the journal of *Environmental Science & Policy* and is part of Mathew Silas's PhD thesis titled "*Patterns of small-scale coastal fisheries and local fisheries management in Tanzania: adaption to a changing climate*".**

**READ THE FULL PAPER:**

Silas, M.O., Mgeleka, S.S., Polte, P., Sköld, M., Lindborg, R., de la Torre-Castro, M. & Gullström, M. Adaptive capacity and coping strategies of small-scale coastal fisheries to declining fish catches: insights from Tanzanian communities. *Environmental Science & Policy*, 108: 67–76.

[Available here](#)



## COASTAL AQUACULTURE IN ZANZIBAR | By Lina Mtwana Nordlund

Despite its immense potential, mariculture in East Africa is generally in its infancy, with the exception of seaweed farming. **Zanzibar (Tanzania) has been the main African seaweed producer since 1989 through the farming of *Eucheuma denticulatum* and *Kappaphycus alvarezii* for the extraction of the polysaccharide carrageenan which is widely used in food, pharmaceuticals and cosmetics.**



**Attempts to introduce and establish other mariculture practices have been made, but their significance so far has been limited.** Zanzibar encourages the development of the sector and aims to significantly raise the revenues produced by aquaculture, but comprehensive information on mariculture activities is missing and the management of natural resources in the intertidal zone, where most of the activities take place, is not yet fully developed. **Our study provides an overview of the multi-sectoral coastal aquaculture development in Zanzibar over the past 30 years based on empirical evidence from interviews, field observations,**

**policy reports and literature reviews. The collected information could be used for a deficiency analysis aimed at improving policies and management strategies for future mariculture development.**

**Our study identified and mapped seven types of coastal aquaculture activities taking place around the coast of Zanzibar.** Seaweed farming is the only widespread mariculture enterprise operating on a commercial scale and employing thousands of local women. Sea cucumber farming is rapidly expanding due to a newly established hatchery. Farming of finfish, crab, pearl oyster,

sponge and coral is little developed or in trial stages with limited national economic importance, but with local significance. These activities were introduced over the past 15 years mostly by donor-driven projects, but after several attempts ceased with the completion of the projects. Seaweed farming is generally considered a female job and an individual or family labour, while the other mariculture activities are performed by cooperative groups of farmers, inclusive of men and women, who share the capital investment and may undertake different tasks in the group.

**Our study found that despite their difference in nature, mariculture activities in Zanzibar have a common dilemma. Mariculture farmers face serious economic limitations that do not enable them to improve their farming techniques and infrastructure,** resulting in small and irregular production. Consequently, reliable remuneration is not fostered and mariculture is merely a part-time labour, outcompeted by the already established activities of food provision. In order to increase profitability, technological innovation and appropriate training are urgently needed at farm level. Moreover, coordinated efforts to upgrade existing non-farm value chain segments such as seed and feed provision, logistics and trade, are necessary for the aquaculture production supply to grow and need to be considered in conjunction with farm development. A value chain approach which also takes into account the indirect benefits from aquaculture, should be considered when policies to support mariculture expansion are developed.

**The potential expansion of the sector however will include the risk of environmental degradation. In this regard Zanzibar is considered as “vulnerable” since there are no formal regulations concerning mariculture and no coastal zoning statutes to denote tenure rights.** For this reason, a shift to formal statutory regulations and planning might be necessary. To aid the implementation of regulatory measures, a support mechanism might be needed to strengthen the efficacy of mariculture governance. In Zanzibar, a bottom-up system of managing environmental resources is already in place and a participatory governance framework, where farmers’ associations with their own by-laws at local level, work together with the government and other value chain stakeholders at national level, might be appropriate. In Zanzibar, the establishment of the Zanzibar Seaweed Farmers Association could be revived, provided with further support and used to strengthen mariculture governance and innovation in the entire sector.



*Seaweed farm in Paje, Zanzibar © Rahim Saggaf*



### READ THE FULL PAPER

Stefania Charisiadou, Christina Halling, Narriman Jiddawi, Kristinavon Schreeb, Martin Gullström, Terése Larsson and Lina Mtwana Nordlund *Science Direct*. [Available here](#)

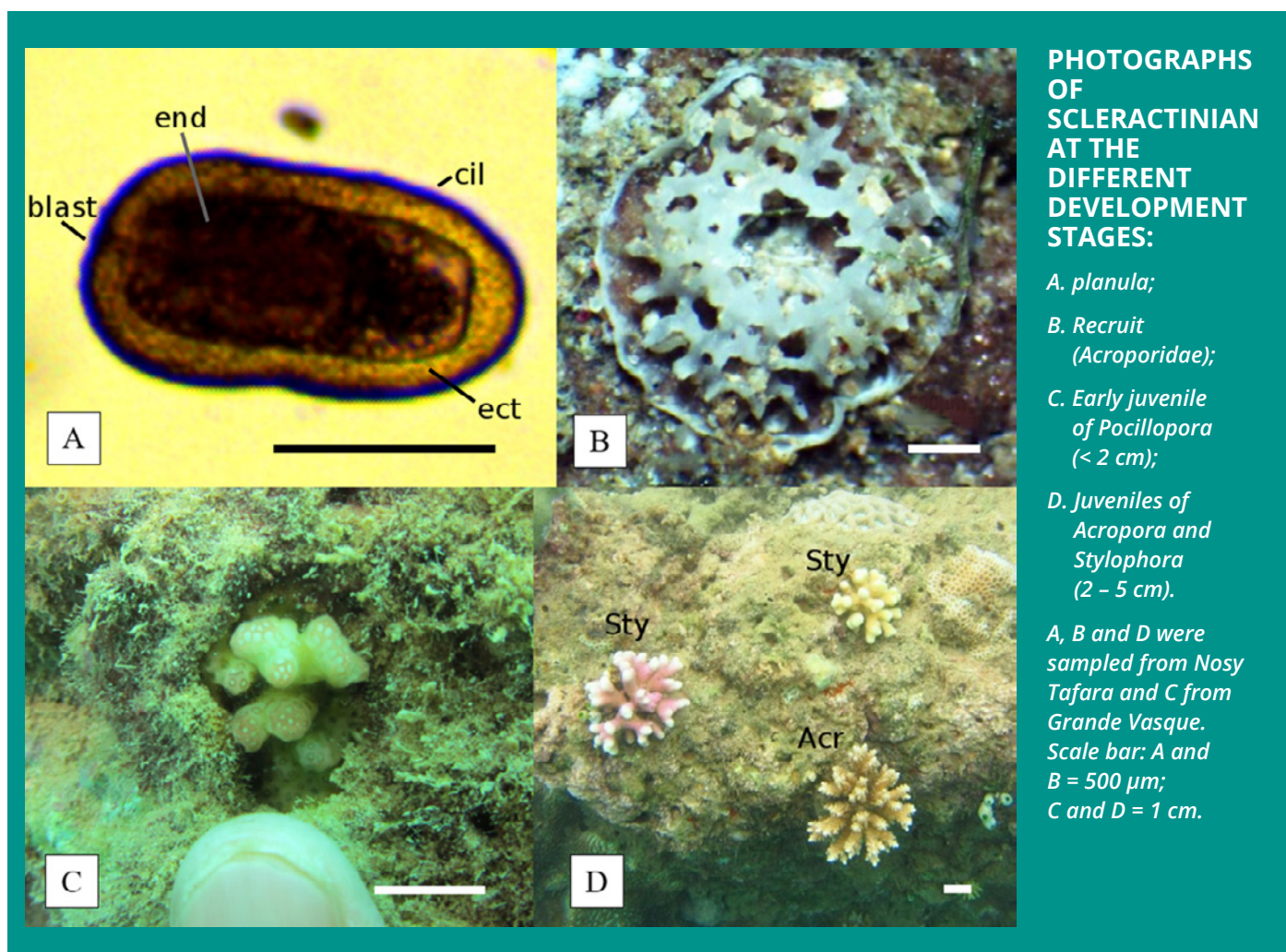
# HIGH RATES OF CORAL RECRUITMENT COULD BE KEY TO RESILIENCE

| By *Gildas Todinahary*

Coral reefs have been subjected to thousands of years of disturbance of both natural and human origin, such as cyclones, episodes of coral bleaching, and the proliferation of coral predators. Although these disturbances have been part of the history of reefs for years, the recent increase in their frequency and intensity, related to global climate change, has caused serious damage.

In this context, many research programmes focus on monitoring the state of health of reefs, and on improving management and conservation measures. **A huge effort has recently been made all over the world to better understand the mechanisms of recolonization following disturbances, and to determine the resilience capacities of disturbed reefs.** In order to do so, it is essential to determine the modes of reproduction and the processes of recruitment of the coral communities.

The ability of coral reefs to continue producing larvae defines their resilience, and information on recruitment processes is important to understanding their dynamics. Understanding the ecological processes that influence this resilience is particularly essential and has become a high research priority. **In Madagascar, a study on recruitment performed between October 2013 and September 2014 was the first of its kind in the country.**



**The research paper reported on the spatial and temporal distribution of coral larvae, recruits and juveniles, off the coral reefs of southwestern Madagascar,** using the most recent survey methodology and recruit identification techniques. Researchers began with weekly monitoring for the presence of coral larvae in the plankton, followed by a monthly assessment of recruits using ceramic recruitment tiles, and an estimate of the recruitment rate of juveniles (1 < Juveniles < 2 years) using the quadrat method.

**Coral larvae were observed in plankton nine out of 12 months.** The recorded mean annual density of planula varied from  $0.43 \pm 0.41$  larvae  $m^{-3}$  to  $3.23 \pm 5.72$  larvae  $m^{-3}$ . Their abundance was highest at the beginning of the warm-wet season and peaks in density were observed in November and December, suggesting that most corals release their eggs or larvae a few days or weeks before this period.

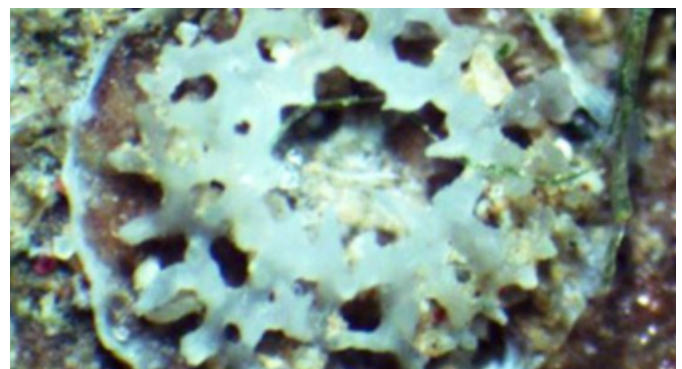
The number of recruits per tile varied from zero (Grande Vasque in November 2013) to 218 (Nosy Tafara in August 2014). Seasonal distribution of coral recruitment was different between the studied sites. The mean annual density of newly settled recruits was significantly higher at Nosy Tafara with  $94.91 \pm 101.08$  recruits  $m^{-2}$  compared to Grande Vasque and Rose Garden with  $18.75 \pm 34.32$  recruits  $m^{-2}$  and  $11.57 \pm 18.47$  recruits  $m^{-2}$ , respectively. This observed rate for recruits is comparable to the observed recruitment rate in other regions of the world.

Researchers also observed a significant difference between the abundance of recruits and that of

juveniles. The results of the juvenile abundance assessment revealed high rates ( $> 10$  juveniles of  $m^{-2}$ ) compared to other regions and the theoretical threshold.

**The results of this study suggest that despite the unprecedented degradation of coral reefs, particularly those of the Great Toliara Reef, the observation of natural recruitment demonstrating a high rate is positive** and could be a key to the resilience of coral assemblages, although there are several post-recruitment factors that can induce a significant mortality of recruits and coral juveniles. These findings provided an in-depth understanding of the function and recolonization capacity of coral reefs. Faced with fishing and/or aquaculture activities, which are potential sources of disturbances of human origin and are rapidly increasing in these regions, coral reef managers will be able to benefit from new biological and ecological information which allow for better management guidance for the conservation and restoration actions that are undertaken.

**Researchers continue the work in order to gain deeper knowledge on the reproduction and dynamics of coral assemblages in Madagascar.**



## READ THE FULL PAPER

Todinanahary, G., Hasintantely, N., Eeckhaut, I. & Lavitra, T. 2021. First evaluation of coral recruitment in Madagascar. *Western Indian Ocean Journal of Marine Science*, 20(1): 47–62.

[Available here](#)



### WIOMSA MEMBER NAMED MINISTER IN MADAGASCAR

**DR PAUBERT TSIORY MAHATANTE**, who has been leading the *“Nutritional security, sustainable fisheries and aquaculture and livelihoods”* theme of the Western Indian Ocean Governance Network (WIOGEN), has been appointed Minister for Fisheries and Blue Economy in Madagascar.

Dr Mahatante has also served as Secretary General of the Southern African Non-State Actors platform in Fisheries and Aquaculture (SANSFAFA) within the SADC region and is a founder of the southwestern Indian Ocean tuna and tuna-like species network (SWIOTUNA).

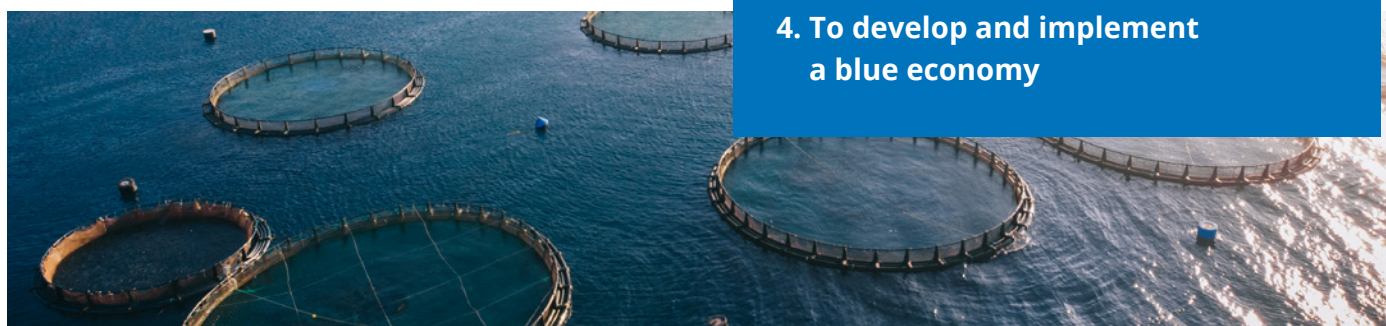
Through WIOGEN, SANSFAFA and SWIOTUNA, he has conducted research and advocacy activities to promote sustainable aquaculture and responsible fisheries, especially small-scale fisheries, thereby contributing to the effort to alleviate poverty, ensure food security and promote job creation in Africa.

**Dr Mahatante holds a PhD in applied oceanography and many different qualifications in fisheries and marine ecosystems management.** He has 15 years of professional experience in the diverse fields of consultancy, leadership, informatics, renewable energy and local development.

**Dr Mahatante hopes that under his leadership the Ministry of Fisheries and Blue economy will become one of the main pillars supporting the economic development of Madagascar.** This will occur through the improvement of governance and the promotion of the blue economy by 2030.

#### The ministry will have four areas of focus:

1. To combat illegal, uncontrolled and unregulated fishing
2. To improve governance
3. To improve fisheries agreements
4. To develop and implement a blue economy



# FISHERIES AND AQUACULTURE RESEARCH FOR A VIBRANT BLUE ECONOMY IN TANZANIA | By Ismael Kimirei

The annual scientific meeting of the Tanzania Fisheries Research Institute (TAFIRI), which was themed “Fisheries and Aquaculture Research for Vibrant Blue Economy in Tanzania”, took place at the Gold Crest Hotel in Mwanza, Tanzania, on 30 to 31 August 2021.



A group of participants

## The meeting had six sub-themes, namely:

- Innovative and sustainable aquaculture production
- Sustainable inland and marine capture fisheries
- Fisheries and aquaculture value chains and marketing
- Fisheries and aquaculture information systems
- Fish handling, processing and technologies
- Aquatic ecosystem and environment

The meeting was graced by Dr Rashid Tamatamah, permanent secretary of the Ministry of Livestock and Fisheries, and brought together a total of 87 researchers in person; several others from China, South Africa, Switzerland, the United States, Germany and Denmark attended virtually. In all, 56 presentations were given.

Those who attended the face-to-face meeting included TAFIRI researchers from around the country, a select group of researchers from other

institutions (mainland Tanzania and Zanzibar) and regional fisheries management institutions, actors from the private sector, NGOs and fisheries and aquaculture managers. The main goal was to exchange and disseminate research findings and provide management recommendations to the fisheries research and management community, thus providing a rare science to policy dialogue.

**In addition, the meeting provided an opportunity for researchers in fisheries and aquaculture to share the constraints and challenges confronting the sector, and chart the way forward so that identified potential for future research development may be tapped.** Researchers were urged to design studies that are capable of supporting the implementation of Tanzania’s third National Five Year Development Plan, the **Sustainable Development Goals** and the **blue economy agenda**. **To quote Dr Tamatamah, “the future depends on what we do today”.**



**In his opening speech, Dr Tamatamah reiterated the importance of the fisheries sector in supporting nutrition and food security, livelihood, employment and income for Tanzanians.** He also highlighted the importance of research-informed fisheries and aquaculture policies, and assured the audience of the government's commitment to supporting fisheries and aquaculture research.

Delivering the welcoming note, Dr Ismael Kimirei, director-general (DG) of TAFIRI, told the audience that the last TAFIRI scientific meeting took place about 12 years ago and the 2021 meeting provided an important opportunity to present research findings that have been generated since 2009. He indicated that the next scientific meeting will open doors to researchers from other national and regional institutions and the science to policy dialogue will be conducted immediately after the scientific meeting and will include more stakeholders.

While the fight against the COVID-19 pandemic continues and the world restricts in-person meetings to the minimum, the opportunity to conduct face-to-face scientific meetings will be valuable because the interactions between junior, senior and principal researchers with different knowledge and experiences is priceless for scientific networking and interactions.

**The meeting ended with a discussion on the way forward.** This discussion was co-facilitated by two former DGs of TAFIRI, Prof Philip Bwathondi and Dr Benjamin Ngatunga, who together urged the management of TAFIRI to continue organizing scientific meetings and to consider co-organizing them with other institutions. They also reiterated the message from Dr Tamatamah about consulting the existing research agenda, policy tools and national development plans as we move towards improving and expanding research on the blue



*The permanent secretary of the Ministry of Livestock and Fisheries, responsible for Fisheries, Dr Rashid Tamatamah (far right) together with former and current TAFIRI Director Generals (DGs). The permanent secretary is also a former TAFIRI DG.*

economy. A call to collaborate with other institutions and NGOs on fundraising for research was made by Dr Anthony Taabu-Munyaho, the deputy executive secretary of the Lake Victoria Fisheries Organization and Dr Arthur Tuda, the executive secretary of WIOMSA, who also congratulated TAFIRI on organizing the meeting. The chairman of the TAFIRI Board of Directors, Yahya Mgawe, thanked all participants, especially WIOMSA, and all sponsors for the honour they afforded TAFIRI and requested for their continued support.



*One of the sessions*

# CELEBRATING AFRICA'S FIRST MARINE PROTECTED AREAS DAY 2021 | *By Judy Mann-Lang*



Marine Protected Areas (MPA) Day started in 2021 and is the initiative of an alliance of South African organizations all passionate about the protection of marine life and people.



*MPA Day Banner at uShaka Sea World from SAAMBR*

**The idea to launch MPA Day started with the realization that while terrestrial protected areas are well known in South Africa, the same cannot be said for their marine counterparts.**

Marine protected areas (MPAs) are critical for the conservation of valuable marine biodiversity, and they have the potential to play an equally important role in supporting people – both socially and economically. However, most people in South Africa have never heard of MPAs and thus their value is not appreciated by decision makers or the general South African public. In fact, research we undertook revealed that less than 20 percent of visitors to uShaka Sea World in Durban could name one MPA in South Africa.

**So, how can we raise awareness of MPAs amongst the public, in a cost effective and impactful manner?** Awareness days have proved to be very popular and they are used by

environmental organizations around the world to highlight selected issues. In fact, many organizations plan their communication calendars around these special days. Amongst the almost 140 different environmental days celebrated around the world, there is no day dedicated to raise the awareness of MPAs. World Oceans Day is celebrated on 8 June each year and in South Africa, Marine Week takes place in October. MPA Day can complement these days and provides a focus on MPAs.

**MPA Day is an opportunity to bring local attention to:** the importance of protected areas in the ocean; the need to properly manage the MPAs we already have; and explore ways to enhance the benefits of MPAs to people. Through MPA Day we have the opportunity to connect people who are already interested in MPAs and introduce people who have never heard of an MPA, to the idea that South Africa does indeed have “game reserves” in the sea.

**The MPA Day alliance included two communication experts and four conservation organizations.** With absolutely no budget, this tiny team managed to make the first MPA Day a resounding success. Galvanizing an effective media campaign during the build up to the day was critical. Social media campaigns included regular posting on: Facebook, Twitter and Instagram accounts; the MPA websites [MPA day — Marine Protected Areas South Africa](#) and [MPA DAY | SAAMBR](#); and the generation of [informative fact sheets and maps](#) for educators and others. Traditional media campaigns included articles featured in over 40 newspapers and magazines, radio and TV interviews and over 100 online articles. Communication was

co-ordinated by FLOW Communications and Olivia Jones Communications, with the support of SAAMBR, Two Oceans Aquarium, Dyer Island Conservation Trust and WILDOCEANS (a programme of the WILDTRUST).

**By joining with people all over South Africa in celebrating MPA Day we made a clear statement that no matter where we live, we can all help to protect the ocean and thus ensure that the ocean continues to support us.** We greatly exceeded our goals for the first MPA day and we hope that this is the start of an annual celebration throughout Africa and perhaps even globally. Please join us next year for MPA Day 2022 – everyone is welcome. **Let Africa lead the way!**

**Activities on the day included: a virtual visit to four MPAs with live crossings to meet the people and some of the animals from those MPAs [#mpaday - YouTube](#);** moving poetry performed by the amazing Dr Gcina Mhlophe and her daughter; exhibits in the uShaka Sea World and Two Oceans Aquarium; beach clean-ups; special displays in MPAs; and much more. The social media campaign included a #MPADay Twitter chat which ensured that during the week leading up to 1 August 2021, over 3 million people were reached on social media. We are very grateful to everyone who made these events happen.



Sodwana Bay  
Primary School  
rocky shores lesson



# PROJECTS SUPPORT COMPLEMENTARY POLICY-RELEVANT RESEARCH

| By Lucy Scott and Sofia Alexiou

**Sustainable Oceans, Livelihoods and food Security Through Increased Capacity in Ecosystem research in the Western Indian Ocean (SOLSTICE-WIO) is a four-year project, funded by the UK Global Challenges Research Fund (GCRF).**



Fishing landing at Kunduchi, Tanzania

**The project is active in three WIO countries (Tanzania, Kenya and South Africa) with the objective of undertaking novel and collaborative research to understand selected WIO fisheries and the impacts of current and future changes.**



## SOLSTICE

Sustainable Oceans, Livelihoods and food Security Through Increased Capacity in Ecosystem research in the Western Indian Ocean

The Western Indian Ocean Large Marine Ecosystems Strategic Action Programme Policy Harmonisation and Institutional Reforms (WIO LME SAPPHIRE) project aims to assist and support government institutions in the WIO region to implement activities needed to deliver the regionally agreed strategic action programme. This programme has been developed by the countries, with the support of the United Nations Development Programme (UNDP), the Global Environment Facility (GEF)-financed Agulhas and Somali Current Large Marine Ecosystems (ASCLME) project, and the South West Indian Ocean Fisheries Project. SAPPHIRE is being executed by the Nairobi Convention and implemented by UNDP with GEF funding. The project benefits the governments of Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, South Africa and Tanzania. The overall objective of the SAPPHIRE project is to achieve effective long-term ecosystem management in the western Indian Ocean large marine ecosystems,

in line with the strategic action programme as endorsed by the participating countries.

### **It has five integrated components and each of them is intended to achieve complementary outcomes:**


- **Component 1:** Supporting policy harmonization and management reforms towards improved ocean governance
- **Component 2:** Stress reduction through community engagement and empowerment in sustainable resources management
- **Component 3:** Stress reduction through private sector/industry commitment to transformations in their operations and management practices
- **Component 4:** Delivering best practices and lessons through innovative ocean governance demonstration
- **Component 5:** Capacity development to realize improved ocean governance in the WIO region.

Under Component 4, SAPPHIRE is supporting the Kenya Marine Fisheries Research Institute (KMFRI) and the Institute of Marine Sciences in Tanzania to undertake oceanographic research on the North Kenya Bank and the northern Pemba Channel respectively, designed to inform policy and governance regarding these important ecosystems.

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**SOLSTICE has demonstrated its approach to strengthening research capacity through three fisheries-related case studies in Kenya, Tanzania and South Africa. These have been selected by partners in each of the three countries.**

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 **Tanzania case study: Pemba Channel small pelagic fishery under climate threat.** The small pelagic fishery is important for local communities in Zanzibar and mainland Tanzania as a source of food security, nutrition and livelihood support. This diverse fishery includes mackerel, sardines and anchovies – found in schools over the continental shelf, in bays and deep lagoons with nutrient rich waters. They are more abundant during the southeast monsoon, when stronger winds drive upwelling that brings nutrient rich water to the surface.

 **Kenya case study: Emerging fishery of the North Kenya Bank, an opportunity for coastal populations.** The North Kenya Bank fishery is expected to spur economic growth for local communities. If well managed, it could help achieve national development goals, including poverty alleviation and wealth creation. Sustainability requires informed management interventions, but there is only scant information on the ecological status and drivers of the fishery.

 **South Africa case study: Environmental drivers and socio-economic consequences of the South African Chokka squid fishery collapsing.** The collapse of the Chokka squid fishery in 2013 had a devastating effect on the Eastern Cape, one of the poorest provinces in South Africa. The reasons for the collapse are unknown, although local fishers believe it happened as a result of environmental change. SOLSTICE-supported research is addressing key environmental and anthropogenic factors controlling the ecosystem dynamics of the Agulhas Bank. The results will help explain why the fishery collapsed, and inform the fishery and government as to whether the current recovery is stable, or whether similar collapses are likely in the future.

Scientists working in-country at institutions supported through both the SOLSTICE and SAPPHIRE projects have recognized the valuable body of science-based research outputs that have been generated. At a country level, the science teams will be working with these research findings to inform the 2021 revisions of the national Marine Ecosystem Diagnostic Analyses (MEDAs) that will subsequently inform the revision of the regional Transboundary Diagnostic Analysis (TDA).

Both the SAPPHIRE and SOLSTICE projects are facilitating the development of policy briefs by national teams. In addition, the uptake of science into policy is outlined in the SOLSTICE Science to Policy Action plan, facilitated by WIOMSA, which enables research outputs to be taken up into national, regional and transboundary policy processes in the WIO region. These complementary initiatives are designed to inform the science-to-policy process and to bring fisheries and environmental research activities closer together in the WIO. In addition this will provide an excellent example of governments utilizing focused support from diverse sources and working towards priority issues in their respective countries.

# NATURE SEYCHELLES SELLS THE WORLD'S FIRST DIGITAL SPECIES

| By Liz Mwambui



In what is widely seen as a disruptive move for conservation, almost 70 percent of Nature Seychelles' recently launched "NATURE COLLECTIBLES" have been sold after only two weeks of being on offer, raising about USD 7 000 for conservation of a unique songbird once on the brink of extinction.

The Nature Collectibles (non-fungible tokens (NFTs) for conservation) are a digital likeness of 59 endangered Seychelles magpie robins (*Copsychus sechellarum*) currently found on Cousin Island Special Reserve, a 52-year-old land and sea no-take protected area managed by the non-governmental organization (NGO). The Million Dollar Bird, as it's called by Nature Seychelles, was selected to herald the world's first digital nature collectibles conceptualized in partnership with the International Union for Conservation of Nature (IUCN) Green List of Protected and Conserved Areas, and the Swiss-based NGO, Porini Foundation.


According to analysis from Porini Foundation, the collectibles have generated interest in 50 different countries with the smaller denomination NFTs costing USD 10, USD 50 and USD100 selling out almost immediately after the launch and trailing off in the following weeks by six purchases of USD 200 and four purchases of USD 1 000. The big ticket collectible NFT worth USD 10 000 is still up for grabs, as are most of the USD 500 NFTs.


Nature Seychelles is well known for its inventiveness – its projects are usually game changers and "first to market". The foray into NFTs is, however, new ground for the NGO and indeed the entire conservation world, asserts Dr Nirmal Shah, Nature Seychelles' chief executive.


"But it's an exciting one nevertheless," he says, just fresh from a podcast with a leading outlet for blockchain and cryptocurrency news. We will be offering more NFTs to forge a new road to income and to extend the NFT market beyond art, games and music," he says.


**“We have been talking about how important it is to innovate during this crisis. This is the first of many ways we are breaking the mould of traditional fundraising”**

*Dr Nirmal Shah,  
Nature Seychelles' chief executive.*


**Species:** *Copsychus sechellarum* 


**Conservation Actor:** Nature Seychelles 

**Location:** Cousin Island Special Reserve, Seychelles 



**Your support helps nature conservation in Seychelles.**

**Status:** Endangered 

**Population:** 460 



The collectibles are a digital likeness of 59 endangered Seychelles magpie robins on Cousin. Photo: © Matthias Malmqvist



The funds raised will be used for conservation of the bird. Photo: © Claire Waters

**An NFT is a one-of-a-kind piece of digital content linked to an image or a video, etc. The NFT's ownership is authenticated and verifiable by the blockchain, a technology that can prevent copy pasting** and was first used for cryptocurrencies like bitcoin. That means while copies of videos, images and even animated GIF images can multiply on the internet, there can be only one with a certificate of authenticity. The launched Nature Collectibles are thus unique digital representations of the Seychelles magpie robin, they cannot be copied or multiplied. Like other collectibles, people can buy, sell and trade them or even use them as collateral. They have been implemented on a zero-carbon blockchain solution developed by Porini Foundation and their carbon footprint is only a few milligrams of CO<sub>2</sub>, which may be compensated through Porini.

**The launch of the collectibles generated worldwide media interest as a novel way to raise much needed funds for conservation.** The first to cover the launch was CNN, followed by the BBC and other international, regional and local media.

**The Seychelles magpie robin was once one of the rarest birds in the world.** In 1990 less than 20 birds remained on Fregate Island in Seychelles.

The Royal Society for the Protection of Birds (RSPB) and Birdlife International started a recovery programme, which was taken over by Nature Seychelles in 1998. The programme has been a tremendous global success story with 460 birds now occurring on five islands.

**“There is ongoing monitoring. We build and clean nest boxes, check each bird for diseases, and run SMART – the Seychelles Magpie Recover Team – a group of managers taking care of the birds on the islands where they occur in Seychelles. The money raised will go towards ongoing efforts to save the bird, which we hope to see taken off the IUCN Red List someday,”** Dr Shah says.

**“Conservation is a marathon not a sprint”**

*Dr Nirmal Shah, Nature Seychelles' chief executive.*

We feel that most of what is being discussed in terms of funding these days doesn't really look at supporting this marathon, namely recurrent budgets, but rather time-bound projects, which to me are sprints. It's become very, very frustrating. We will be looking at other funding disruptions including cryptocurrency, remote ecotourism, and others yet to be unveiled,” Shah concluded.

# AFRICAN YOUTH SUMMIT – YOUTH COMING TOGETHER FOR IMPROVED OCEAN PROTECTION

The AYS Team

| By *Thembelihle Mbokazi*



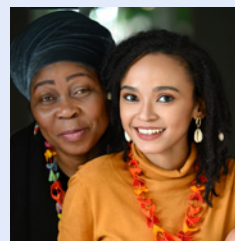
**ON 19 AND 20 AUGUST, YOUTH FROM ACROSS AFRICA CAME TOGETHER AT THE FIRST EVER VIRTUAL AFRICAN YOUTH SUMMIT GEARED TOWARDS IMPROVING OCEAN PROTECTION FOR OUR CONTINENT.**

**The Summit brought together prominent experts in the field of marine conservation, representatives of youth-led organisations, educational institutions, artists and students. The goal was to navigate through unconventional spaces while calling to action our leaders to address the biodiversity crisis and the importance of protecting our oceans.**

**The Summit featured 40 speakers who led pivotal discussions that addressed how Africa could contribute its share to the global target (30 percent by 2030 – 30 x 30) and how this has to be youth-inclusive and tailored for African people so that it produces positive feedback.**

**The discussions not only honed in on the urgent need to protect our oceans but also the inclusion of youth in these initiatives.**

Prof Rashid Sumaila, who is the current Canada Research Chair University Killam Professor at the Institute for the Oceans & Fisheries, highlighted that “young people should not think that they are too small to start anything. Start with what you have as that will add up. People will join once they’ve seen that you’ve started”.



**The Summit also featured local (African) artists like Dr Gcina Mhlophe and Nomakhwezi Becker who are creating**

**awareness and conveying the message of conservation through their art.**

**The voice of the youth was loud and clear** – we seek more equitable and inclusive marine protection solutions for our continent. This call to action will be addressed in an open letter which will be later presented to global leaders in the spaces of ocean protection.

**We welcome all youth to get involved and to share their messages with us as we work** to collate and produce this statement that will be reflective of Africa’s youth. We encourage you to get in touch with us via email ([africanyouthsummit21@gmail.com](mailto:africanyouthsummit21@gmail.com)) and share your voice. Together our voices are stronger, and together we can begin taking action to become the custodians of tomorrow.

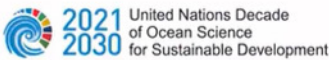
Feel free to contact us on [africanyouthsummit21@gmail.com](mailto:africanyouthsummit21@gmail.com)



# CO-DESIGNING SOLUTION-ORIENTED RESEARCH FOR SUSTAINABLE DEVELOPMENT | *By Sven Stoebener*

## Co-designing solution-oriented research for sustainable development

Creating guidance for research projects & partnerships



The virtual and interactive event “Co-designing solution-oriented research for sustainable development – developing guidance for research projects and partnerships” held on 8 July 2021 was in response to the United Nations Decade of Ocean Science for Sustainable Development (2021–2030) programme.

The event formed part of the United Nations Ocean Decade Laboratory “An Inspiring and Engaging Ocean” which promoted the need for a transformation in ocean science. In order to advance the ocean science agenda and research partnerships for sustainable development, more than 60 participants discussed online, how co-designing of projects could be advanced and supported. The session posed questions of how partners could create a common understanding and a shared vision of their research. The session highlighted the importance of a co-design approach for solution-oriented research and the need to build knowledge and the practice of co-design in a more consistent and coordinated manner to support collaboration and a science-to-policy implementation.

The keynote address was delivered by **Professor Gabriele Bammer** (Australian National University) and provided an overview with regard to transdisciplinary research and co-design. Professor Bammer highlighted the importance of solution-oriented research but also emphasized the complexity of co-design and its imperfections:

**“We want to integrate what we can, and manage what we can’t”**

*Professor Gabriele Bammer (Australian National University)*

Professor Bammer also mentioned the need to develop tools for integration, which ushered in the four-part input sessions focused on the co-design process.

**A number of sessions were organized during the workshop which included:** a session on “Reflections on participatory and transdisciplinary marine research approaches focusing on the development of a common understanding and a shared vision in the co-design process” by Professor Samiya Selim (University of Liberal Arts, Bangladesh); a session on stakeholder engagement for marine spatial planning processes in a highly diverse setting, by Dr Lysa Wini-Simeon (University of Strathclyde); Dr Anna Zivian (Ocean Conservancy) introduced the topic of communication in science focusing on the importance of communication in both designing and developing the research, as well as in designing ways for the research to be actionable; and Dr James Kairo (Kenya Marine and Fisheries Research Institute) explained how scientific structures and the continuation of activities were ensured in the mangrove research programme in Kenya. Dr Kairo’s session focused on the importance of sustaining projects by engaging diverse groups of stakeholders such as government, civil society, private sector, local communities and donors. Dr Kairo further stresses that a key element included building trust, which takes time and requires flexibility.

**The online event included an additional four interactive sessions with participants in group discussions on how co-design in partnership projects can be supported.** The topics included: the development of common

understanding and a shared vision in the co-design process and how project partners could collaboratively develop the concept of the project, agree on the process and methods, and identify the desired outcomes; stakeholder engagement, in particular about collaboration, equal rights, distribution of roles, research ethics and strategy implementation; communication of the science to policymakers and identifying challenges posed by digital communication; and maintaining scientific structures beyond the end of the project and creating a sense of responsibility, especially in cooperation projects between the global north and the global south.

**The inputs, key findings and relevant examples gathered during the virtual event** will be used to create guidance for future research projects and partnerships in order to co-design solution-oriented research for sustainable development.

**The online session was jointly organised by the MeerWissen secretariat** at the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), the **Leibniz Centre for Tropical Marine Research (ZMT)**, **Future Earth Coasts** and **WIOMSA**.

The [recording](#) of the workshop and the key points from the discussions can be downloaded from the [Meerwissen website](#).





The Opinion is a column written by WIOMSA members, partners and readers of the WIOMSA Newsbrief. Writers of the Opinion column express personal opinions and views on topical issues of regional importance.

The column provides the opportunity for WIOMSA members and partners to discuss, debate and propose solutions to the critical issues that face the region. The opinions, beliefs and viewpoints expressed in this segment are solely the authors' own and do not reflect WIOMSA's view or official policies of the Association.

## THE FUTURE OF OCEAN RESEARCH IN THE OCEAN DECADE – A WESTERN INDIAN OCEAN PERSPECTIVE

| By Sarah Ater and Nelly Isigi Kadagi



*Researchers will need to evolve too and be willing and able to work in complex research environments*

While the ocean science community has taken significant strides towards developing knowledge and skills, and implementing actions that have the potential to turn the tide on threats to ocean ecosystems, **it will need to continuously evolve, present dynamic frameworks and create knowledge systems and skills aimed at supporting actions for a sustainable ocean.**

The Ocean Decade has been envisioned as a “once in a lifetime” opportunity for countries to tap into ocean science with the purpose of improving the sustainable use and management of oceans – for socio-economic, cultural, food and environmental

security. While 2021 has been labelled as a “super year” for the oceans, the COVID-19 pandemic has ushered in a different normality that calls on nations, leaders and communities to rethink and refocus on equitable and inclusive solutions for building back better in a post-pandemic world. A better world and better oceans with “no one left behind” **will require scientific cooperation with an emphasis on the advancement of ocean research to achieve the outcomes we want.**

**How do we do it and how do we reimagine the future of research in the western Indian Ocean (WIO) region?** Gaps and disparities in the capacity to

conduct, access and use scientific research in order to sustainably and equitably utilize ocean resources are widening. The uncertainties brought about by COVID-19 exacerbate the difficulties inherent in the traditional ways of developing scientific research capacity. For instance, in-person field-based research and laboratory analysis, are an integral part of ocean research but have been curtailed by the pandemic. Can we possibly envision WIOMSA's Marine and Coastal Science for Management (MASMA) projects identifying creative ways to bring field trips and laboratory work into the classroom? Could this be virtually extended to the public in a way that builds capacity, shares information and engages a collective understanding of ocean issues? **Now, more than ever, ethical models that promote remote science and digitized field-based methods are necessary to ensure that WIO countries are well placed to develop long term solution-oriented ocean research that connects people and the oceans.**

With restrictions on cross-border travel and varying health and safety measures implemented by countries, it seems that the tide has turned in favour of: saving on time and resources; decarbonizing field research; and ensuring equitable partnerships. For cross-border collaborations, the pandemic has increasingly demonstrated that we require an important shift in how we achieve multi-disciplinary innovative solutions, coupled with transboundary perspectives.



Dr Bernadine Everett



Dr Everett's sentiments shine the spotlight on the future of ocean research in the WIO which requires **an urgency for adaptable and effective multidisciplinary, transboundary and multinational solutions and prompts countries and institutions to consider scientific technology in bolstering meaningful collaborations.**

Traditional capacity development structures in the WIO region are yet to fully confront the disparities in skills and knowledge aggravated by the pandemic. The ocean science community has responded quickly by intensifying virtual interactions through approaches such as: online training and courses; group or one-on-one meetings; webinars, conferences and livestreams. The ability to provide virtual capacity development creates inclusivity (engaging diverse ages and specializations, enabling participation of all genders and those with special needs). However, even with new processes being implemented and new ways of building capacity adopted, we will need to be aware that the intensified use of virtual technology could result in inequalities in access to opportunities to acquire

Dr Bernadine Everett of the Oceanographic Research Institute in South Africa notes that:

**“In the evolving world of marine science, the reality of inter-connectivity of ecosystems and ocean processes has led to a change from small, single discipline research projects to large, multi-discipline, transboundary projects. This means that researchers need to evolve too and be willing and able to work in these complex research environments. They need to be adaptable and tolerant while still believing in their own scientific capabilities”.**



skills and knowledge. Assessing the existing capacity development practices and creating innovative strategies will be critical to the success of the Ocean Decade.

Sources of funding to support capacity development have drastically declined. These include support for hands-on research, citizen science, field equipment and materials. With the opportunity to magnify the impact of scientific research, institutions and structures for delivering capacity development in the WIO will **need to jointly rethink and scale-up the investments in sustainable, practical and effective efforts to support the current and next generation of researchers.**

Recognition of the youth in the Ocean Decade is essential for how we successfully conserve and manage the ocean environment. Mobilizing and supporting the youth to play an active role in co-creating strategies will be critical in shaping the Ocean Decade in the WIO. **The involvement of youth in national and regional dialogues around issues such as the blue economy, sustainable development and the role of**



**local communities, will push forward bold decisions and actions for the future they want for the oceans.** Youth engagement will encourage the rise of interdisciplinary and dynamic leaders who are able to address the scale of the challenges the Ocean Decade presents. The future of ocean research in the WIO may be viewed from diverse perspectives and across different scales – a reminder that bold actions are needed for the region to experience the Ocean Decade.

Actions that are digital, multi-disciplinary, collaborative, inclusive and innovative will be critical to achieve a sustainable WIO.

**We turn to Dr Cosmas Munga of the Technical University of Mombasa, Kenya, who reflects on the future of marine research for young people in the WIO when he says:**

***“One has to think outside their discipline of training and embrace multidisciplinary collaborations.”***

**Put simply, collectively transforming the way we do things will move us closer to “the ocean we need for the future we want”.**

# PUBLICATIONS AND ANNOUNCEMENTS

## Reasons for hope: Issue 13 of the WIOMSA magazine

**People and the Environment, focusing on “WIO Marine Conservation: people, progress, prospects”, has been inspired by the Western Indian Ocean Marine Protected Areas Management Network (WIOMPAN).**

The foreword for the issue was written by the renowned marine biologist, oceanographer and explorer, Dr Sylvia Earle. It offers a message of hope for marine conservation in the region: “In this volume of the WIOMSA magazine are eloquent, thoughtful contributions that underscore reasons for hope, with clear evidence that our power to destroy the environment can be countered, decline reversed, ecosystems restored.

While it is not possible to go back to the planet that today’s grandparents knew, the right actions now can yield for tomorrow’s children a safer, more resilient world. Now we know what our predecessors could not: Protecting the ocean is not an option. Our existence depends on it,” writes Dr Earle. [Read here](#)



## WIOMSA Litter catch up

**The July edition of the WIOMSA Litter Catch Up newsletter is now out!**

**The monitoring programme for marine debris is the first of its kind in Africa and could well be the first in the world.**

Teams in seven countries (Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa, and Tanzania) are working together covering a great area, collecting data in a harmonious way and sharing information, educational material, and reports. This report covers the period from April 2021 to the end of July 2021. [Read here](#)

## Western Indian Ocean Marine Protected Areas Outlook

produced by the United Nations Environment Programme, Nairobi Convention and WIOMSA, examines the current and future status of marine protected areas in Comoros, Kenya, France (in its Western Indian Ocean territories), Madagascar, Mauritius, Mozambique, Seychelles, South Africa and Tanzania.

**The WIO MPA Outlook highlights the considerable progress made by the region in establishing marine protected areas, indicating that more than half of the total area - an estimated 63 percent of the overall square kilometers - was brought under protection in the seven years since the 2015 adoption of Sustainable Development Goal 14.5, which committed countries to conserving at least 10 percent of their marine and coastal areas by 2020.**



[Read here](#)

## WIOJMS Volume 20 Issue 1



READ  
HERE

*A new issue of the Western Indian Ocean Journal of Marine Science (WIOJMS) has just been published!*

**WIOJMS Volume 20: Issue 1, contains the following 12 papers:**

- [Impact of a ring net fishery in the inshore marine waters of Kilifi on the reproductive biology of six pelagic fish species.](#) *David K. Bett, Mwakio Tole, Chrisestom M. Mlewa*
- [Local people and mangroves: Ecosystem perception and valuation on the south west coast of Mauritius.](#) *Shafiiq Abib, Chandani Appadoo*
- [Seasonal variability of vertical patterns in chlorophyll-a fluorescence in the coastal waters off Kimbiji, Tanzania.](#) *Nyamisi Peter, Masumbuko Semba, Charles Lugomela, Margareth Kyewalyanga*
- [Efficacy of Lactobacillus plantarum and Saccharomyces cerevisiae on growth improvement of hybrid Nile and Rufiji tilapia populations.](#) *Levinus L. Mapenzi, Matern S.P. Mtolera, Dirk J. de Koning, Aviti J. Mmochi*
- [First evaluation of coral recruitment in Madagascar.](#) *Gildas G.B. Todinanahary, Nomeniarivelo Hasintantely, Igor Eeckhaut, Thierry Lavitra*
- [Quick and cost-effective mapping of subsistence and artisanal fishing areas within and adjacent to a marine protected area.](#) *Marcos A.M. Pereira, Tânia I.F.C. Pereira, Cristina M.M. Louro, Carlos Litulo, Raquel S. Fernandes*
- [Growth, mortality, exploitation rate and recruitment pattern of Octopus cyanea \(Mollusca: Cephalopoda\) in the WIO region: A case study from the Mafia Archipelago, Tanzania.](#) *Mathew O. Silas, Mary A. Kishe, Johnson G. Mshana, Masumbuko L. Semba, Said S. Mgeleka, Bigeyo N. Kuboja, Benjamin P. Ngatunga, Muhaji A. Chande, Patroba Matiku*
- [Effects of different types of manure on the culture of marine plankton as a potential source of food for mariculture hatcheries.](#) *Fadhili M. Malesa, Margareth S. Kyewalyanga, Rose J. Masalu*
- [Population characteristics and exploitation of yellowfin tuna \(Thunnus albacares Bonnaterrae, 1788\) in the coastal waters of Kenya.](#) *Edward Kimakwa, Micheni Ntiba, Agnes Muthumbi*
- [Fibropapillomatosis infection in a population of green turtles at Watamu Bay, Kenya.](#) *Sharon M. Jones, Itamar Caspi, Charles Lucas*
- [Diversity of mangrove fungal endophytes from selected mangrove species of coastal Kenya.](#) *Helen M. Kiti, Cosmas N. Munga, Josiah O. Odalo, Paul M. Guyo, Cromwell M. Kibiti*
- [Presence of microplastics in jellyfish \(Crambionella orsini\) along the Kenyan coast.](#) *Winnie Awuor, Agnes Muthumbi, Deborah V. Robertson-Andersson*



## WEBINAR SERIES: CASE STUDIES FROM THE WESTERN INDIAN OCEAN

# Interdisciplinary research for the sustainable management of the marine environment, climate change and food security:



**SOLSTICE**  
WEBINAR SERIES

INTERDISCIPLINARY RESEARCH FOR THE SUSTAINABLE  
MANAGEMENT OF THE MARINE ENVIRONMENT,  
CLIMATE CHANGE AND FOOD SECURITY  
CASE STUDIES FROM THE WESTERN INDIAN OCEAN

8<sup>TH</sup>, 15<sup>TH</sup>, 22<sup>ND</sup> & 29<sup>TH</sup> NOVEMBER 2021  
2PM – 4PM EAT / 11AM – 1PM GMT

FIND OUT MORE AND REGISTER AT  
[SOLSTICE-WIO.ORG/OUTPUTS/SOLSTICE-WEBINARS](https://solstice-wio.org/outputs/solstice-webinars)

**FIND OUT MORE AND REGISTER [HERE](#)**

**SOLSTICE-WIO is a four-year collaborative project funded by the UK Global Challenges Research Fund (GCRF).** Launched in October 2017, it brought together recent advances in marine technologies, local knowledge and research expertise to address challenges of sustainable management of the marine environment, food security and climate change facing the western Indian Ocean region.

As SOLSTICE is coming to an end, project researchers from the WIO countries and the UK have produced a series of presentations based on their work. **Running at about 20 minutes each, these presentations highlight project successes in research, stakeholder engagement, communication, and turning science into policy.**

### 8 November 2021 (2–4pm EAT):

**The North Kenyan Banks** – the new frontier for food security (including the launch of the Special Issue of OCMA East African Coastal Current ecosystems: at the frontier of climate change and food security)

### 15 November 2021 (2–4pm EAT):

**Living marine resources of the Pemba Channel** – at the frontier of climate change and food security (including the launch of the translational material for fishery management and communities)

### 22 November 2021 (2–4pm EAT):

**Environmental drivers and socio-economic consequences of the South African chokka squid fishery collapsing** (including the launch of the DSRII Special Issue “Dynamics of the Agulhas Bank, South Africa – ecosystem shifts and future trends in the squid fishery”)

### 29 November 2021 (2–4pm EAT):

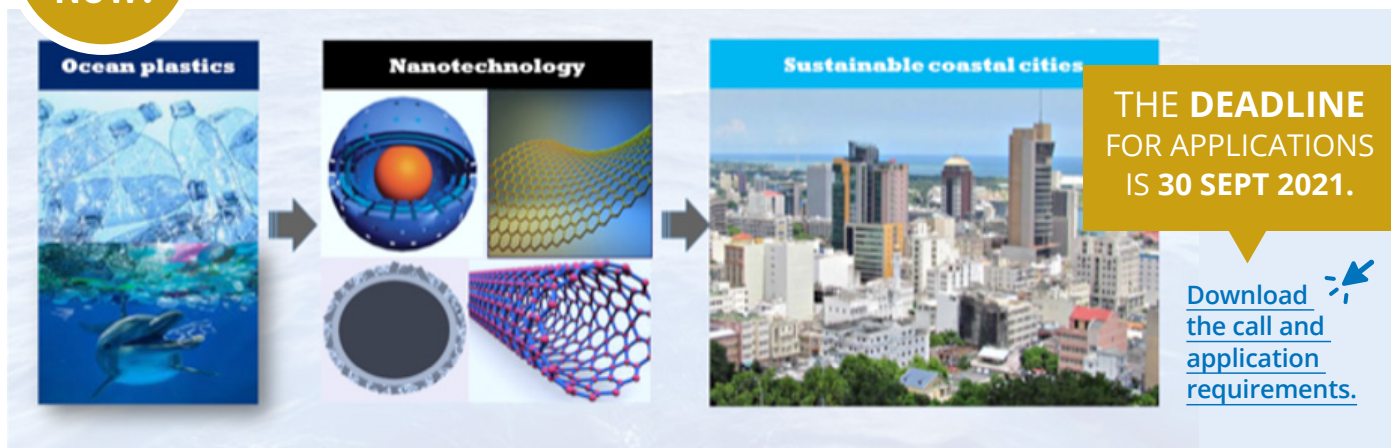
**Marine technologies for ocean sustainability** and the massive open online course “Ocean Science in Action”



# CALL FOR APPLICATIONS

APPLY NOW!

## TRAINING WORKSHOP ON NANOTECHNOLOGY



**Ocean plastics** → **Nanotechnology** → **Sustainable coastal cities**

**THE DEADLINE FOR APPLICATIONS IS 30 SEPT 2021.**

[Download the call and application requirements.](#)

Nanotech Futuristic Solutions and WIOMSA's Cities and Coasts project are pleased to announce the **call for applications for a workshop on "Nanotechnology and Its Applications for Sustainable Cities and Coasts"** that will take place in **Johannesburg, South Africa on 29 November to 4 December 2021.**

The training workshop will equip professionals and practitioners from various fields with fundamental tools of nanoscience and will make them better prepared to implement and utilize nanotechnology in marine science, city planning, science policy advocacy and renewable energy systems. By offering practical sessions on the application of nanotechnology, the training provides a first-hand experience on nanotechnology and helps to close the gap in its potential uses in diverse fields. The training is open to participants from the western Indian region and targets advocacy experts, marine scientists, city planners, university postgraduate students and engineering professionals who are interested in nanotechnology.



**APPLY NOW!**

**THE DEADLINE FOR APPLICATIONS IS 30 SEPT 2021.**

## TRAINING COURSE ON MARINE LITTER MONITORING

KMFRI in cooperation with WIOMSA, wishes to invite qualified participants to apply for a **marine litter monitoring training course.** **The training will be hosted by KMFRI on 22 - 30 November 2021.**

The objective of the course is to provide an in-depth understanding of harmonized protocols for inland and marine litter survey and assessment in order to standardize data collection and analysis. The training targets city planners, local governments, NGOs, academics and policymakers from coastal towns/cities in Kenya, Madagascar, Mozambique and Tanzania who are involved in waste management. Applicants should demonstrate technical competence in one of these fields: urban planning; waste management; ocean sciences; marine resource management; and environmental science and should have frequent interaction with marine litter and solid waste management.

[Download the call and application requirements.](#)

CITIES AND COASTS ANNOUNCEMENTS:

# CALL FOR APPLICATIONS

APPLY  
NOW!

## TRAINING ON THE ASSESSMENT OF ECOSYSTEM DYNAMICS

THE DEADLINE  
FOR APPLICATIONS  
IS 25 SEPT 2021.

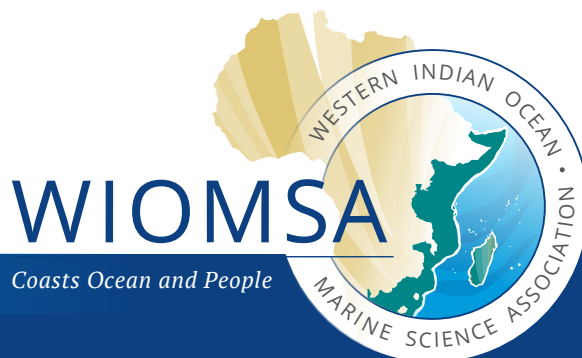


The Kenya Marine and Fisheries Research Institute (KMFRI), in collaboration with South Eastern Kenya University, Machakos University, Kenyatta University, The University of Nairobi, Centre for Marine and Environmental Research of the University of Algarve and a research, training and consultancy organisation called ERACOMA, are organizing:

A regional training workshop on **“Building Capacities of Local Practitioners for the Assessment of the Dynamics of Ecosystems in the Emerging Coastal Towns in the WIO Region”** that will be held in the coastal region of **Kenya from 15 to 20 November 2021.**

This training aims to equip coastal conservation practitioners, urban planners, natural resource managers, landscape architects and decision makers with knowledge, skills and tools for identifying, classifying, and quantifying ecosystem services in their jurisdiction, especially in the WIO region. The training will be organized as a hybrid workshop with a limited number of participants attending in-person and selected individuals from the rest of the WIO region participating virtually.

[Download the Call for applications](#)  
and the [Application form.](#)



WESTERN INDIAN OCEAN MARINE SCIENCE ASSOCIATION

MIZINGANI STREET, HOUSE NO. 734  
P.O. BOX 3298, ZANZIBAR, TANZANIA.

P +255 24 22 33 472 | F +255 24 22 33 852

[secretary@wiomsa.org](mailto:secretary@wiomsa.org)  
[www.wiomsa.org](http://www.wiomsa.org)